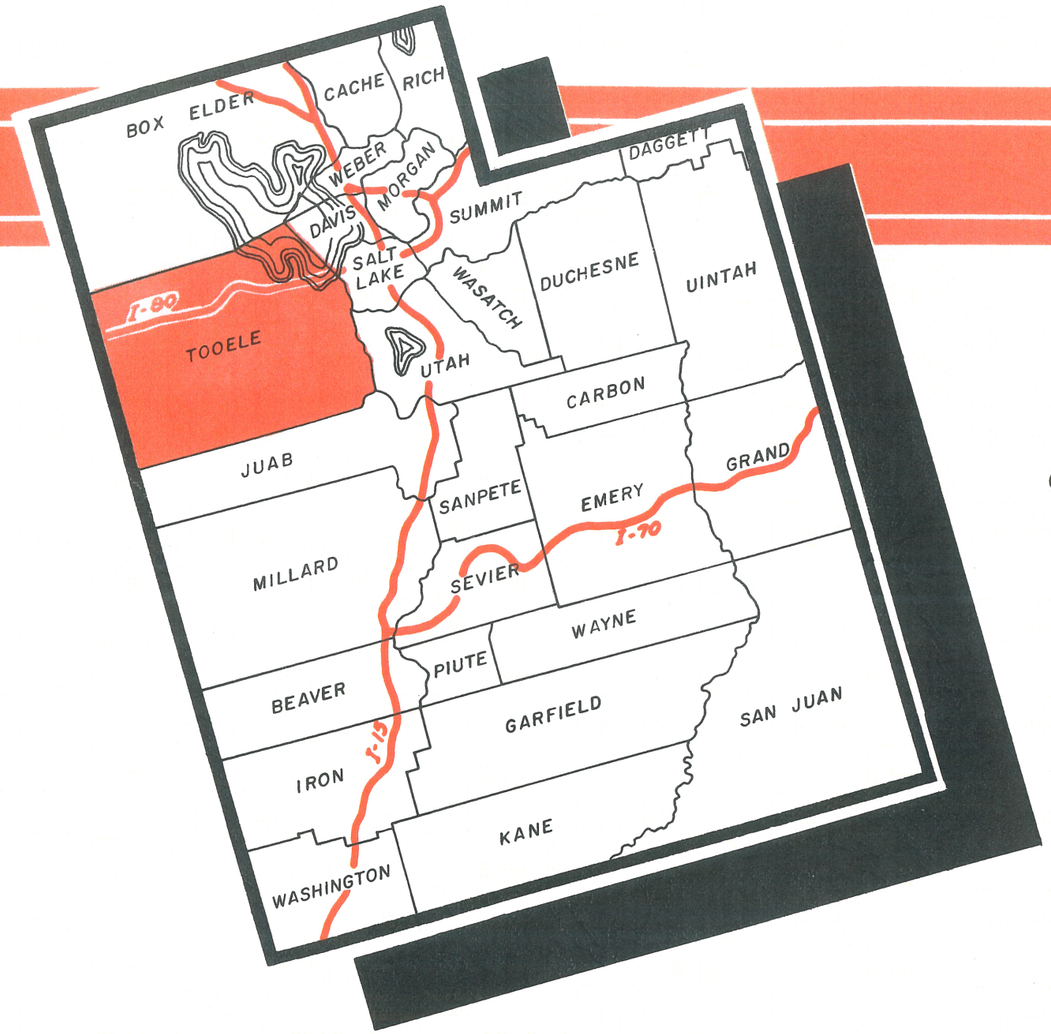
MATERIALS INVENTORY



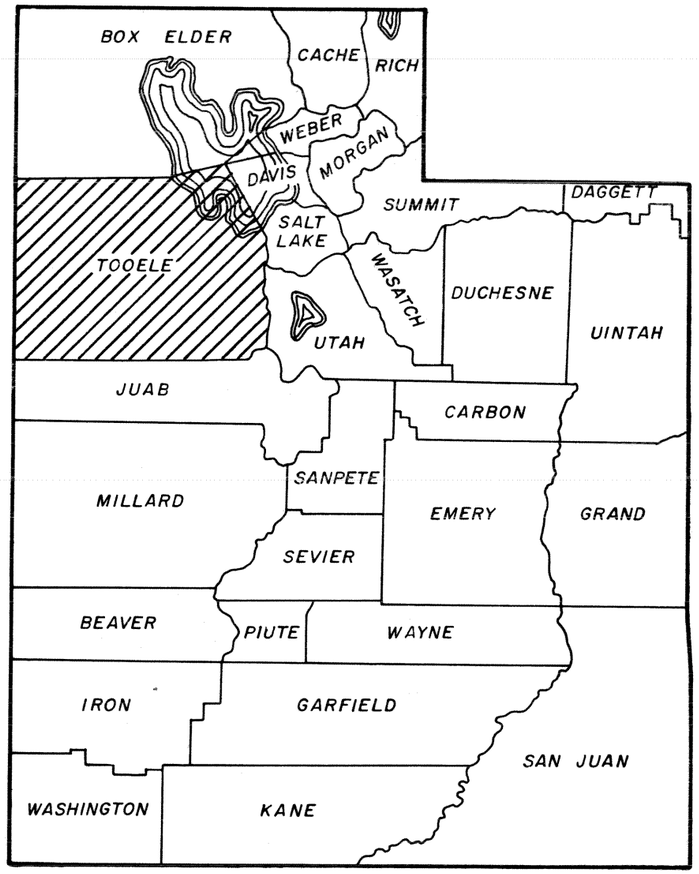
TOOELE COUNTY

- POTENTIAL SOURCES
- PIT LOCATIONS
- TEST DATA
- GEOLOGY

DISTRICT TWO
MATERIALS SECTION
UTAH STATE
DEPT. OF
HIGHWAYS

MATERIALS INVENTORY

TOOELE COUNTY



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PURPOSE

The Materials Inventory enables the Utah State Department of Highways to locate, investigate and catalog the materials sites needed for highway construction. It is a system by which an accessible, permanent and up-to-date record is kept on all materials sites that are now owned or may be purchased or optioned by the Department of Highways in the future. Also included are commercial sites and localities that are not presently available for use.

The inventory is valuable in eliminating wasteful duplication of work in locating materials sites. General information on known materials sites and prospective sites is available on a county basis in booklet form. Information in addition to that contained in the booklets is available from a central file in the Materials Inventory Section of the Materials and Research Division and in the respective District Materials Sections.

Notwithstanding the enormous quantities of road-building materials that are now available in Utah, it must be realized that one day these materials may be depleted or completely unobtainable due to the encroachments of man. As highways improve, the quality of materials that are used in highway construction must also improve. Good quality material is not readily available in all places, and this fact alone makes it necessary to locate and secure choice sites before they are depleted or become unobtainable. The advent of the Federal Highway Program has further emphasized the necessity for large quantities of high quality material for highway construction. The Materials Inventory is designed to collect, organize and tabulate all useful information related to materials available or potentially available for highway construction.

PROCEDURES

The Materials Inventory is accomplished by a logical step by step sequence as follows:

1. Compilation of all available site data from existing files and records.
2. Acquisition of available geologic and soil map coverage of the county.
3. Plotting the above information on $\frac{1}{2}$ inch = 1 mile county maps.
4. Field examination of each site to determine quantities available, to collect samples as needed, to check geologic and soil contacts, and to observe the physical setting for feasibility of material removal.
5. Preparation of the inventory booklet.
6. Establishment of a permanent record in the Materials Division and District files to include detailed information concerning each site.

Three forms are used to aid in compiling the data. The forms become part of the permanent records. They include:

Form MI-1, "Preliminary Materials Survey" (see figure 1-a), is especially designed for the collection of the initial materials inventory data while in the field. The information contained on this form includes approximate grading, type of material, type of deposit, rock type, surface conditions of the site (indicating obstructions to excavation, etc.), impurities in the material (sand lenses, clay lenses, cementation, etc.), accessibility of site, quantity and quality of material, site number, ownership, and location of site. The form is a specially designed "Needle Sort" card. By notching the card according to the code (Figure 1-b) and using the sorting needle, it is possible to rapidly sort, arrange, or select any information recorded on any card or group of cards in the filing system. The "Needle Sort" instruction manual gives detailed instruction as to the operation and use of this system and the reader should refer to this manual for more detailed information.

Form MI-2, "Materials Source Data", contains information from the lab tests. It also includes a sketch map of the deposit showing the location, outline of the material site, drill holes, sample localities, and information such as direction and distance from a survey station or highway. Drill holes or other sample information is logged in the columns below the sketch map.

Form MI-3, "Pit Evaluation Report", (see figure 2) is designed to aid in the maintenance of current records. It is to be completed by the project engineer after pit operations have ceased. Included on the form are items such as quantity removed; the type, size and quality of material; and physical factors involved in pit operation.

The inventory booklet contains a section designated as "Explanation for Geologic Maps", which describes the various formations. Following this are the maps titled "Geologic Map Showing Pit Locations and Potential Sources of Gravel and Borrow" which locates known sites by number and symbol. Areas which contain the best deposits of gravel and borrow are shown in green. The yellow areas are chiefly lake bed silt and clay which are unsuitable for road-building material. Bedrock, shown in blue, is not an important source of material at present. However, in the future it may become necessary to use bedrock in areas where unconsolidated rock is not obtainable. The geology shown on the maps represents a compilation from various published and unpublished sources. Corrections and revisions based on field observations were made in critical areas. Through proper use of the geologic maps, the description of geologic units, and test information, the locations of additional sites may be inferred.

MATERIALS INVENTORY FORMS

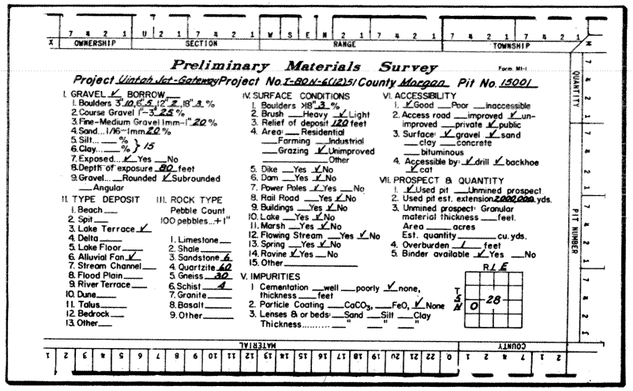


Figure 1-a. Reproduction of the Preliminary Materials Survey Form MI-1 on the Needle-Sort card. The actual card is 8 x 5 inches.

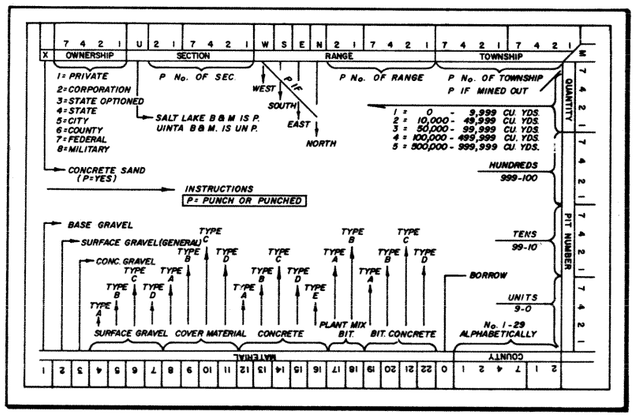


Figure 1-b. Reproduction of code card used in punching Form MI-1. The actual card is 8 x 5 inches.

PIT EVALUATION REPORT

Form MI-3 (Rev. 6-64)

To: Engineer of Materials and Research

Project Name & No. _____ Date _____

Pit or Prospect No. _____ Station Location _____

Legal Description _____

TYPE OF MATERIAL	MATERIALS REMOVED (CU. YDS.)
Base Gravel	
Surface Gravel (Type)	(Cu. Yds. or Tons)
Concrete Sand	
Concrete Gravel	
Bituminous Surface Course Aggregate	
Granular Backfill Underdrain	
Borrow	
Other Material (Rip Rap, Chips)	
Total Gravel Removed	

Comments:

Quality of Material _____

Uniformity of Material _____

Lenses.....gravel _____ sand _____ silt _____ Clay Thickness _____

Amount of Oversize (+12") _____ % Average thickness of Overburden _____

Estimated Quantity Remaining _____ cu. yds.

Further Investigation necessary to determine remaining quantity: yes _____ no _____

Features of Pit: _____

Difficulties of Operation: _____

Recommendations for Future use of Pit: _____

cc: District Materials Engr.

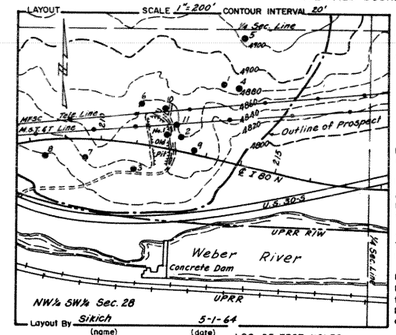
By: _____
Project Engineer

Figure 2. Reproduction of the Pit Evaluation Report Form MI-3. The actual form is 8 ½ x 11 inches.

UTAH STATE DEPARTMENT OF HIGHWAYS

MATERIALS SOURCE DATA

Form MI-2



Pit No. 15-001 Project Name Uintah Jct - Gateway
Project No. I-80N-6(12)51 County Morgan State Utah
Owner U.S.A. (Wasatch National Forest)
Address _____

T. N. 28 R. 1 E.

Property Optioned ____ Expiration Date ____
Cost: ____ per Cu. Yd. ____ per Ton
Public Domain Set Aside ____
Date From 1964 To 1969
Prospect Only ✓

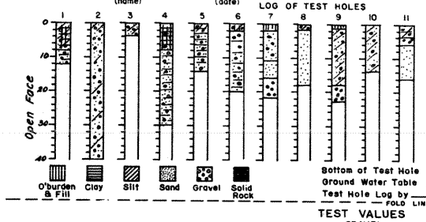
Dead Haul ____ miles to ____
or ____ miles to ____

Material	Thickness (ft.)	Quantity (cu. yds.)
Gravel	60	2,000,000
Borrow		
Overburden		

Area of Deposit 43 acres
Type of Deposit Alluvial fan & Lake terrace
Investigations with: Drill ____ Backhoe ____ Cat ____
Other ____

LAYOUT INSTRUCTIONS: Show deposit layout, with test holes properly located and numbered. Indicate the north point, land ties, land lines and ownership. Show topography, drainage, power poles, or other obstructions to excavation. Gravel should be outlined in green, borrow in brown, and haul roads in red.

LOG OF TEST HOLES



Bottom of Test Hole *
Ground Water Table ▼
Test Hole Log by _____

ADDITIONAL PIT DATA

Rock Type (% of Each) Gneiss 30 %
Quartzite 60 % Sandstone 6 %
Schist 4 %
Maximum Size 18"
Percent oversize (+12") - 5 %
Cementation of Deposit ✓ None ____ Partial ____ Complete.
Thickness of Cementation ____ ft.
Particle Coating None
Remarks Old pit has not been worked since early 1930's. Complete outline of prospect shown on supplementary map in Central Materials Inventory file.

FOLD LINE

TEST VALUES

GRAVEL

Test Hole No. Field Sample Number	Laboratory Number	Sample Depth (ft)	Sieve Analysis (% Passing) Before Crushing: 3"	2"	1"	¾"	No. 4	After Crushing: 1"	¾"	½"	⅜"	No. 4	No. 8	No. 16	No. 30	No. 200	Liquid Limit	Plastic Index	Swell	Absorption	Mech. Anal. +4	-4	Na2SO4 Loss	Fracture Face Count	ICT-1 Ave. PSI: Wet	Dry	ADDITIONAL INFORMATION
Colbond	214-SA-64	0-30	98.7	93.9	80.7	52.6	39.2	100.0	92.3	73.4	60.3	48.1	33.1	25.0	13.2	6.3	18.2	N.P.	.007	0.28	3.1	6.97	10.06	93	171	250	
9	287-SA-64	25-9	98.6	90.7	74.9	56.4	44.0	100.0	96.1	81.1	70.9	53.8	41.7	31.5	16.1	6.7	17	N.P.	.005	0.53	3.1.0	8.33	9.06	90	128	153	
7	288-SA-64	5-24 Bulk	98.5	94.8	87.8	52.4	43.2	100.0	93.6	78.3	69.5	55.7	47.9	42.9	31.7	5.4	19	N.P.	.011	0.64	24	7.22	7.83	85	146	202	

BORROW

Test Hole No.	Field Sample Number	Laboratory Number	Sample Depth (ft)	Maximum Size	Laboratory Values: Percent Passing: ¾"	3"	2"	1½"	1"	¾"	No. 4	No. 10	No. 20	No. 40	No. 200	Percent: Gravel	Coarse Sand	Fine Sand	Silt - Clay	Liquid Limit	Plasticity Index	C.B.R.: Min. % Std.	Dry Dens. lbs/ft³	Proctor: Swell	Opt. % Moist.	Dry Dens. lbs/ft³	Classification A.A.S.H.O.

Samples Submitted by _____ (name) _____ (date)

Test Data Added by _____ (name) _____ (date)

Figure 3. Reproduction of the Materials Source Data Form MI-2. The actual form is 11 x 17 inches.

Test information for samples obtained from each site is summarized on the "Test Data Sheet", with the corresponding pit number for identification. Certain pits may contain both gravel and borrow material, making it difficult in many cases to label the material collected as representative of the pit. This also leaves some doubt as to whether a pit should be called a gravel pit or a borrow pit. As a general rule, a site designated as a gravel pit can be used for borrow if conditions warrant.

The procedures for the functioning of the inventory and for the format of the booklets were established by Roy D. Tea, District Two Materials Engineer; Norbert W. Larsen, former Geologist for the Central Laboratory; and J. Derle Thorpe, former Research Engineer for the Central Laboratory.

REPORT PREPARATION

Field work for the Tooele County Inventory was begun in 1963. The field work at the materials sites was done mainly by Tom McCleary and Jack Tomkins, District Two Geologists and Dyke LeFevre, Materials Engineer. The test data sheets were compiled by Tomkins and the maps were compiled by McCleary. Ignacio Ospina of the Central Materials Laboratory and Mike Bullett of the District Two Materials Section did the drafting for the booklet. Testing of materials was accomplished jointly by the District Two Materials Section and the Central Materials Laboratory. The geologic mapping of Tooele County was based primarily on "The Geologic Map of Northwestern Utah, 1963", published by the Utah Geological and Mineralogical Survey. The entire materials inventory booklet was organized, assembled and prepared under the direct supervision of Roy D. Tea, District Two Materials Engineer.

TOOELE COUNTY GEOLOGY

GEOGRAPHY AND PHYSIOGRAPHY

Tooele County comprises an area of 6,911 square miles in the northwestern part of Utah. It lies entirely within the Basin and Range physiographic province, which is characterized by north-south trending mountain ranges and interior drainage.

Rainfall varies from 5 inches in the desert near Wendover to about 30 inches in the high mountain areas. The highest elevations are in the Oquirrh, Stansbury, Sheeprock and Deep Creek Mountains which give rise to small streams. Many of the streams dissipate into the valley floors, but some are used for agriculture in the Tooele, Rush and Deep Creek Valleys.

The main highways are Interstate 80 (now under construction) and U.S. Highway 40 which cross the county in an east-west direction and Utah Highway 36 which crosses the eastern part of the county in a north-south direction. Utah Highway 215 provides access to Dugway Proving Ground in the southern part of the county.

TERTIARY TO RECENT GEOLOGIC HISTORY

The most important sources of road-building materials in Tooele County are the sand and gravel deposits which accumulated in and were re-worked by Lake Bonneville. Hence, the geologic history which is pertinent to this report is the history of the basin in which Lake Bonneville formed and the conditions during and after the existence of the lake.

The present topographic features began to form about 20 million years ago as a result of movement on north-south trending faults. Uplift along the faults gradually defined the present mountains. The mountains formed an interior drainage basin in the western part of Utah.

Erosion of the uplifted ranges caused deposition of gravel, sand and silt on the slopes of the mountains. Large alluvial fans formed at the mouths of major canyons. At this time the climate was as arid as it is at present. Erosion was caused mainly by intermittent torrential rainfall.

About 25,000 years ago, the arid conditions gradually began to change to a climate of higher precipitation and lower temperature. The lowering of the temperature reduced evaporation. Lake Bonneville began to rise although there were many pauses and some regressions. However, the general trend of the water level was upward. Simultaneously the lake increased in size. When the lake reached its maximum depth of about 1,000 feet, it was 346 miles long and 145 miles wide and had a surface area of 19,750 square miles.

The water remained stationary at the highest level for a long period of time. This level of the lake is named the Bonneville level and the associated terraces are called Bonneville terraces. The lake level then rose and began to overflow at the lowest point on the rim of the enclosing basin. This point was at the northern end of Cache Valley at Red Rock Pass. As the outflowing stream cut down through the pass, the lake level fell rapidly. The downcutting came to a halt about 300 feet below the Bonneville level as the stream encountered a resistant layer of limestone. This level of the lake is called the Provo level. Lake Bonneville remained at the Provo level longer than at any other and there it constructed the largest terraces. Because of their prominent size, the Provo terraces can be readily recognized in various parts of Tooele County. They are 300 feet below the Bonneville terraces and 700 feet above the Great Salt Lake.

After the lake had maintained an outflow at the Provo level for a long period of time, the climate again changed and the lake level fell to an elevation about 400 feet below the Provo level. Here it remained long enough to construct its third largest terrace - the Stansbury. After the Stansbury terraces had formed, the lake continued its downward trend because evaporation exceeded intake. Salinity increased as the lake level decreased. This trend has continued to the present time and the Great Salt Lake is a remnant of Lake Bonneville.

In addition to the three major terraces formed by the waters of Lake Bonneville, there are fifty or more minor terraces. They are comparatively small and are difficult to follow laterally.

During the time of Lake Bonneville the processes of alluvial deposition ceased in areas below the water level, but as the lake receded, deposition resumed. Many of the lake features are obscured by a veneer of alluvium and some have been dissected by streams.

PRINCIPLE TYPES OF MATERIALS DEPOSITS

Sand and Gravel

Lake Shore Deposits. The most important sources of road building materials in Tooele County are the sand and gravel deposits built by the wave and longshore current action of Lake Bonneville. The effects were most pronounced while the lake stood at the three major levels mentioned in the previous section. The materials from which these deposits are built were supplied by streams emptying into the lake and by wave action upon the shoreline. Lake shore deposits that are predominately gravel are shown on the geologic maps as Qltg and those that are predominately sand are shown as Qlts.

Wave-built Terraces. Waves driven by the prevailing winds exert tremendous force on the lake shores. The abrasive action of sand and gravel aid in the cutting of terraces into the shoreline. The debris loosened by the wave action is deposited along the shoreline. These beach deposits are known as wave-built terraces. The materials may be transported along the shoreline by currents. The grinding and pounding action of the waves reduces large rock fragments to gravel, sand and silt size. The undertow which flows outward beneath the incoming waves carries vast quantities of silt and clay sized material outward into deep water where it is deposited on the lake floor out of the reach of further wave action. These processes create deposits that are "clean" and well-sorted.

The unconsolidated alluvial fan deposits are very susceptible to the formation of wave-built terraces. Typical alluvial fan material consists of unsorted boulders, gravel, sand, silt and clay. The silt and clay percentage is usually too great to allow the fan material to be used for base and surface gravel. Many of the pre-Bonneville fans in Tooele County have been re-worked by wave action. The re-working of the fans has created good quality gravel deposits in many areas. Most of these areas are too small to be shown on the geologic map, however, they are important gravel sources.

Spits and Bars. Longshore currents are largely responsible for the formation of spits and bars. The currents are created when waves strike the shoreline at an angle and cause a pulsating movement of the water parallel to the shoreline. Longshore currents are highly effective in sorting and transporting materials. The currents die out rapidly when they are deflected into deep water by headlands projecting into the lake or when the shoreline makes an abrupt change of direction. As the velocity of the longshore currents decrease, their transporting power decreases and the material settles out on the lake bed. A narrow tongue called a spit is constructed, as the current moves sand and gravel along the top of the spit and deposits it at the outward end.

In some places the longshore currents have extended spits entirely across constricted embayments and have isolated particular areas from the main body of the lake. These deposits are called bars. In Tooele County bars have been built across the mouths of many canyons and embayments. The most impressive bar is located near Stockton at the northern end of Rush Valley.

Alluvial Fans. Alluvial fans consist of unconsolidated boulders, gravel, sand, silt, and clay transported by runoff water draining the mountains. They are fan-shaped deposits that extend from the mouths of canyons outward into the valleys and are indicated on the geologic maps by the symbol Qag. Alluvial fan deposits that were upgraded by the action of Lake Bonneville were discussed in a previous section. Alluvial fan deposits that were not re-worked are inferior gravel sources because they are poorly sorted and contain a high percentage of silt and clay. The size of the rock fragments may vary considerably in a given locality, but the average size decreases away from the mountains. Generally the rocks are only slightly rounded and the bedding is very crude.

Fine-Grained Deposits

Sand Dunes. Wind and an adequate supply of sand are required for the forming of sand dunes. The wind selects sand grains of a limited size range and concentrates them into dunes. The clay particles (dust) are lifted into the air and carried great distances. In Tooele County, there are dunes composed of three types of sand. They include:

Silica sand dunes. Silica sand dunes are composed of sand derived mainly from sandstone, quartzite, and granite. They are considered good borrow sources and are shown on the geologic maps by the symbol Qds.

Oolitic sand dunes. Oolitic sand consists of small spherical shaped grains of calcium carbonate that have precipitated out of the lake. Oolitic

sand from the "flats" surrounding the Great Salt Lake has been drifted by the wind into dunes. In the area of Burmester, these dunes are potential sources of borrow. They are shown on the geologic maps by the symbol Qdo.

Gypsum sand dunes. Gypsum dunes have a high calcium sulphate content. They were derived from the "mud flats" east of Wendover and are present in the vicinity of Knolls. They can be used for borrow but are not recommended because of their solubility in water. On the geologic maps they are shown by the symbol Qdg.

Alluvium. Unconsolidated sand, silt, and clay is present locally in the gently sloping surfaces near the floors of the valleys. Most of this material was washed down from higher alluviated areas. It is a potential source of borrow and is indicated on the geologic maps by the symbols Qa and Qas.

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EXPLANATION FOR GEOLOGIC MAPS

Qltg Qlts

Lake Shore Deposits

Built by the wave and current action of Lake Bonneville. Classified as spits, bars, and wave-built terraces. Sorting and stratification is generally excellent and the gravel is usually well rounded. These deposits are present throughout Tooele County on the flanks of mountain ranges. Excellent sources of gravel and borrow materials. Deposits mapped as Qltg are mainly gravel, sand and silt, and those mapped as Qlts are mainly sand and silt.

Qay

Stream Bed Alluvium

Alluvial deposits along active streams. Mapped only along Faust Creek near Vernon. Not considered an important materials source due to better alluvial deposits in adjacent areas.

Qlsa

Bonneville Salt Flats

Lake bed with permanent salt crust several inches thick underlain by clay.

TQu

Tertiary & Quaternary Alluvium

These deposits are mainly the upper parts of Pre-Bonneville alluvial fans, preserved because they are above the highest level of Lake Bonneville (5,200' elevation). They are a good materials source however sorting is poor and fines will have to be removed to make gravel.

Qag

Alluvial Fans

Gravel - Sand - Silt

Unconsolidated fan shaped deposits occuring at the mouths of canyons. Coarser material occurs near the canyon mouths and finer material outward toward the valleys. Usually poorly sorted; fine material must be removed to make gravel. In places re-worked by wave action of Lake Bonneville resulting in "clean", well sorted gravel deposits.

Qds Qdo Qdg

Sand Dunes

Qdo - Dunes of oolitic sand. High calcium carbonate content. An important borrow source.

Qds - Dunes of silica sand. An important borrow source.

Qdg - Dunes of gypsum sand. High calcium sulphate content. Not a good potential borrow source.

Qgm

Glacial Deposits & Surfaces

Located in the upper parts of some canyons in the Oquirrh and Stansbury Mountains. The deposits consist of terminal moraines, lateral moraines, and outwash. In general the sorting is poor and the material ranges in size from boulders to silt. Glacial deposits should be considered an aggregate source for road construction only in the high mountain areas.

Tsl

Salt Lake Formation

Tertiary - White to yellow vitric tuff; tuffaceous tan and white siltstone; orange green, and white claystone; pebble conglomerate and agglomerate. Includes Eocene undivided rocks in the Deep Creek Valley.

Qa
Qas

Alluvium

Sand - Silt - Clay

Unconsolidated, fine-textured alluvial deposits occuring on gently sloping surface near the floors of the valleys. Contain some gravel, but are predominately sand and silt. Considered a good potential borrow source.

Qlc Qlcs

Lake Bed Sediments

Qlc - Lake bed sediments, mostly dry clay. Poorly drained and with enough salt to prohibit agriculture. Not suitable for borrow.

Qlcs - Lake bed sediments, mostly clay with very flat surface, permanently moist, and with high salt content. Not suitable for borrow.

Qm

Marshland

Poorly drained area usually fed by springs; water may be fresh, brackish or salty.

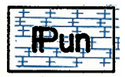
Tf

Tertiary Lava Flows

Includes various types of lava. Present in several locations in Tooele County. A possible aggregate source.

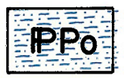
Tertiary Pyroclastic Rocks

Includes volcanic tuff, breccia, and agglomerate of Tertiary age. The main exposures are in the Stansbury and Cedar Mountains. Not a potential aggregate source.



Permian Rocks Undivided

Includes various Permian Formations.



Oquirrh Formation

Lower Permian and Pennsylvanian - Clastic and fossiliferous limestone with subordinate quartzite in the lower part; quartzite and minor cherty limestone in the middle; quartzite with some sandstone, dolomite, shale and limestone in the upper part. In the Desert Range includes rocks mapped as the Ely Formation. A potential aggregate source.

Mississippian Rocks Undivided

Includes various Mississippian Formations. Mainly Humbug Formation and Deseret Limestone.

Tertiary Intrusive Rocks

Includes intrusive granitic and porphyritic rocks of Tertiary age. They are present at Gold Hill, Granite Mountain, the Sheeprock Mountains, and the southern part of the Oquirrh Range. Not considered a potential aggregate source.

Park City Formation

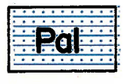
Permian - Consists of lower and upper members of gray, cherty limestone and sandstone respectively, separated by a middle member of dark limey shale with thin beds of phosphate rock. Mapped in the Cedar Mountains. It is not a potential aggregate source.

Chainman and Diamond Peak Formations

Pennsylvanian and Mississippian - Dark-gray quartzite; light-gray limestone; fissle, black claystone, varicolored siltstone; tan to gray conglomerate. Mapped in the Desert Range only. Not considered a potential aggregate source.

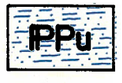
Ochre Mountain Limestone

Upper Mississippian - Brownish-gray, fine-grained, thick-bedded limestone with gray-tan chert in lower part. Contains a black shale member. Mapped in the Deep Creek Range only. Not considered a potential aggregate source.



Paleozoic Rocks Undivided

Includes various Paleozoic rocks of uncertain specific age.



Permian and Pennsylvanian Undivided

Includes many Permian and Pennsylvanian Formations which are not individually shown.

Manning Canyon Shale

Pennsylvanian and Mississippian - Predominately varicolored shale with interbedded limestone, quartzite, and a few beds of siltstone and mudstone. Arkose is present locally. Subject to erosion and is a valley former. Not a potential aggregate source.

Woodman Formation

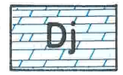
Upper Mississippian - Consists of a lower unit of purplish- to reddish-brown, fine-grained, calcareous sandstone and an upper unit of dark-gray to black, sandy limestone. Both units contain nodules of black chert. Mapped in the Dugway and Deep Creek Mountains only. Not considered a potential aggregate source.

Great Blue Formation

Upper Mississippian - Mainly gray to blue-gray, medium- thick- to massive, uniform beds of limestone. Also contains dark-green to black shale with layers of quartzite; tan- to yellow-brown sandstone and siltstone; dark-brown to black chert bands and nodules. A potential aggregate source.

Madison Limestone or Guardison Limstone

Lower Mississippian - Blue-gray, fine- to medium-crystalline limestone with distinctive dark chert bands. A potential aggregate source.



Jefferson Dolomite

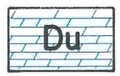
Middle Devonian - Mainly dark-gray, fine-crystalline dolomite with thin limestone and quartzite beds in the upper part. Mapped in the Lakeside Mountains only. Not considered a potential aggregate source.

Sevy Dolomite - Water Canyon Formation

Lower Devonian - The Sevy Dolomite correlates with the basal parts of the Water Canyon Formation. The Sevy Dolomite is a light-gray, very fine-crystalline, dense dolomite. Bedding is well-defined. The Water Canyon Formation consists of light-gray dolomite beds with silty, buff to brown, interbedded siltstones and sandstones. They are potential aggregate sources.

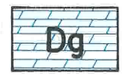
Humbug Formation

Upper Mississippian - Composed of relatively uniform alternations of sandstone, quartzite, crinoidal limestone, and nearly pure limestone. The sandstone beds are yellow-brown to red-brown and the limestone beds are medium-gray. A potential aggregate source.



Devonian Rocks Undivided

Includes various Devonian Formations.

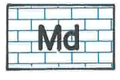


Guilmette Formation

Middle and Upper Devonian - The lower member is predominately black, fine-crystalline, cliff-forming limestone. The upper member is chiefly medium-gray, fine-grained, arenaceous limestone. A potential aggregate source.

Laketown Dolomite

Middle Silurain - Consists of a lower, relatively well-bedded, alternating dark- and light-gray dolomite; an upper dark-blue-gray, massive- to thick-bedded, coarse-crystalline dolomite. A potential aggregate source.



Deseret Limestone

Lower Mississippian - Mainly dark-gray, thin-bedded to massive limestone. Contains some interbedded shaly black limestone layers, chert, and siliceous limestone nodules A potential aggregate source.

Stansbury Formation

Upper Devonian - Characterized by rapid facies changes and thickness variation. In various localities it consists of pebble and cobble conglomerate, siltstone, and vitreous sandstone; minor thin beds of dark-gray limestone and dolomite; minor conglomerate beds with interbedded limestone and dolomite. Mapped in the Stansbury Mountains only. Not considered a potential aggregate source.

Simonson Dolomite

Middle Devonian - The lower member is a gray and tan, to black, fine-crystalline, laminated dolomite. The upper member consists of cliff-forming, fine-crystalline, dark-gray to black limestones interbedded with alternating dolomites of various shades of gray, white, tan, and black. Mapped in the Desert and Deep Creek Ranges only. Not considered a potential aggregate source.

Ordovician and Silurian Undivided

Includes various Ordovician and Silurian Formations. Chiefly Laketown Dolomite and Fish Haven Dolomite.

Ou

Ordovician Rocks Undivided

Includes various Ordovician Formations. Chiefly Swan Peak Quartzite and Fish Haven Dolomite.

Osp

Swan Peak Quartzite

Middle Ordovician - White to tan, medium-grained quartzite. In places it is cross-bedded. Basal part consists of reddish- and greenish-tinted quartzite. Considered a potential aggregate source.

Ofh

Fish Haven Dolomite

Upper Ordovician - Dark-gray to black dolomite with chert nodules and stringers, interbedded light- to dark-gray dolomite, and tan siltstone. Considered a potential aggregate source.

Ogc

Garden City Limestone

Lower and Middle Cambrian - A sequence of light-colored argillaceous limestones and dolomites. The upper part of the formation is a very cherty and sandy limestone in which chert bands form over half of the unit. Considered a potential aggregate source.

Oe

Eureka Quartzite

Middle Ordovician - White, tan, blue, gray, fine-grained quartzite with some thin-bedded gray limestone; tan sandstone; maroon argillite and siltstone. Mapped in the Desert Range only.

Op

Pogonip Formation

Lower and Middle Ordovician - Consists of several units which include blue-gray dolomite, dark-blue-gray limestone with chert beds, orange-brown argillites, orange and maroon mottled, dark-blue-gray limestone, and quartzose sandstone. The dolomite and limestone may be considered potential aggregate sources.

€un

Cambrian Rocks Undivided

Includes various Lower, Middle, and Upper Cambrian Formations. Chiefly limestone.

€uu

Upper Cambrian Rocks Undivided

Includes various Upper Cambrian Formations. Mostly limestone and dolomite.

€mu

Middle Cambrian Rocks Undivided

Includes various Middle Cambrian Formations. Not considered potential aggregate source.

€p

Pioche Shale

Lower Cambrian - A series of reddish-brown or brown-gray weathering quartzites, graywackes, olive-drab to green-brown shale, and phyllitic shale. A slope former. Not a potential aggregate source.

€t

Tintic Quartzite

€pm

Prospect Mtn. Quartzite

Lower Cambrian - The Tintic Quartzite consists of light-pink to maroon pebble conglomerate at the base overlain by light-gray and red-brown quartzite beds. The Prospect Mountain Quartzite consists of gray, green, brown to maroon, medium-grained quartzite and occasional lenses of pebble conglomerate. The Tintic and Prospect Mountain Quartzites correlate with each other and with the Brigham Quartzite of adjacent areas. They are potential sources of aggregate.

P€m

Mutual Formation

Precambrian - Dark-purple, thin-bedded argillite at the base overlain by white and purple quartzite and conglomerate. Mapped in the Sheeprock Mountains only. A potential source of aggregate.

P€bc

Big Cottonwood Group

Upper Precambrian - Pink, white, green, gray, massive quartzite with interbedded bluish-gray, gray, brown, and purple shale. The shale has ripple marks, cross-bedding, and mud cracks. Mapped only at the northern end of Stansbury Island. Not considered a potential aggregate source.

P€s

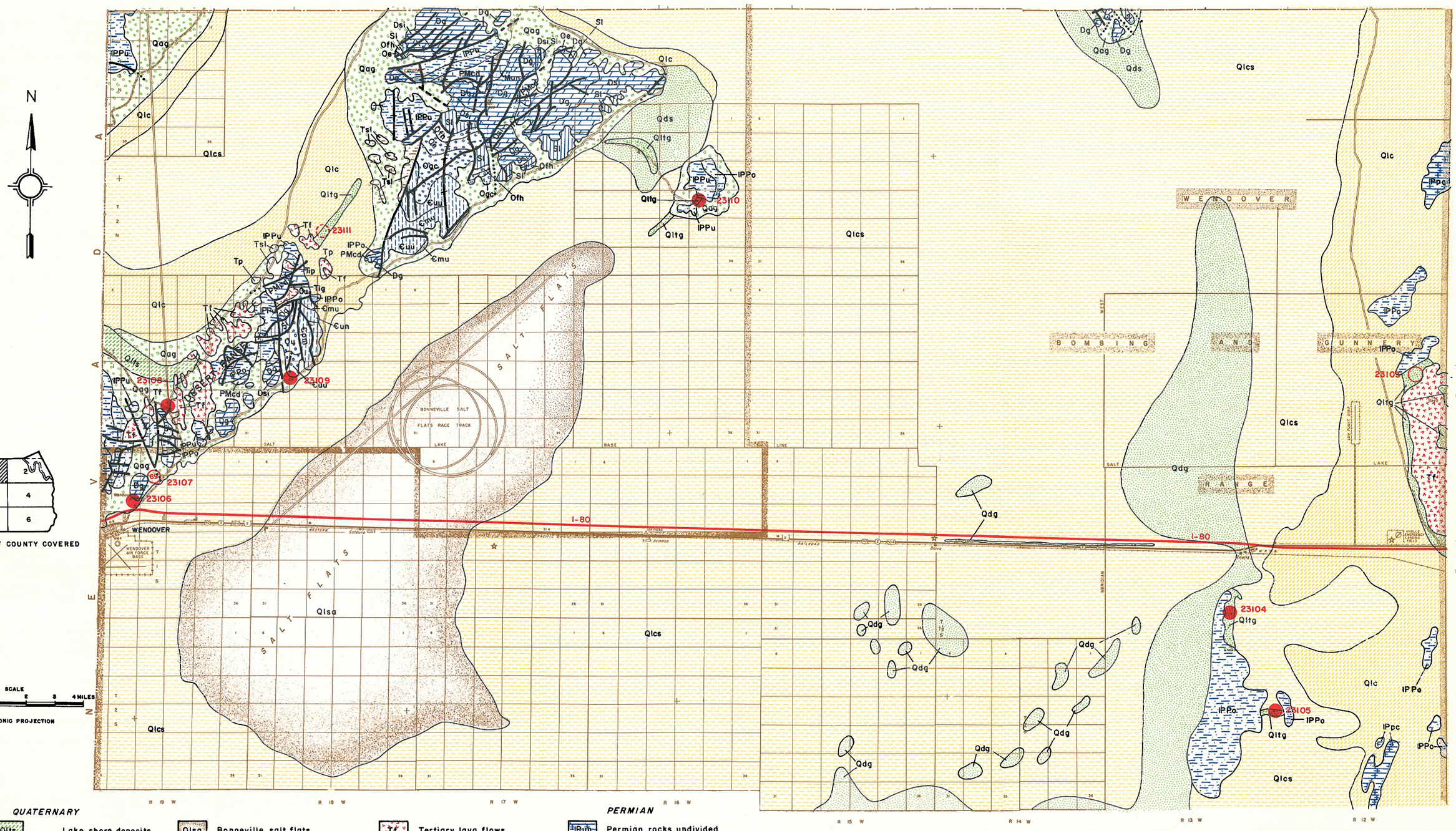
Sheeprock Series

Precambrian - A thick series of metamorphosed sedimentary rocks. Consists of black to silver - black phyllite; white, tan, gray, and light-green shale; and tillite. The tillite is a dark-green, conglomeratic rock with a slate matrix. Mapped in the Sheeprock Mountains only. Not considered a potential aggregate source.

STATEMENT OF LIABILITY

The Utah State Department of Highways assumes no liability concerning the quantity or quality of materials. The information contained in this booklet is based on sound geological and/or geophysical interpretations and laboratory tests performed on the material. However, due to the erratic nature of some deposits, the information may not be completely representative of the materials sites.

GEOLOGIC MAP SHOWING PIT LOCATIONS AND POTENTIAL SOURCES OF GRAVEL AND BORROW
TOOELE COUNTY, UTAH
1966



PORTION OF COUNTY COVERED

SCALE 0 1 2 3 4 MILES

POLYCONIC PROJECTION

QUATERNARY

- Qltg, Qlfs — Lake shore deposits
- Qag — Alluvial fans
- Qa, Qas — Alluvium
- Qds, Qdo, Qdg — Sand dunes
- Qlc, Qlcs — Lake bed sediments
- Qlsa — Bonneville salt flats
- Qm — Marshland

TERTIARY

- TQu — Tertiary & Quaternary alluvium
- Tsl — Salt Lake Formation
- Tf — Tertiary lava flows
- Tp — Tertiary pyroclastic rocks
- Pal — Paleozoic rocks undivided

PERMIAN

- IPun — Permian rocks undivided
- IPpc — Park City Formation

PERMIAN & PENNSYLVANIAN

- IPPu — Permian & Pennsylvanian rocks undivided
- IPPo — Oquirrh Formation

PENNSYLVANIAN & MISSISSIPPIAN

- PMcd — Chainman & Diamond Peak Fms.
- PMmc — Manning Canyon Shale

MISSISSIPPIAN

- Mun — Mississippian rocks undivided
- Mgb — Great Blue Formation
- Mh — Humbug Formation
- Md — Deseret Limestone
- Mm — Madison or Guardian Limestone
- Mg — Madison or Guardian Limestone

DEVONIAN

- Du — Devonian rock undivided
- Dsy — Stansbury Formation
- Dj — Jefferson Dolomite
- Dg — Guilmette Formation

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UTAH STATE DEPARTMENT OF HIGHWAYS
DISTRICT TWO MATERIALS SECTION
GENERAL GEOLOGY FROM 1963 GEOLOGIC MAP OF NORTHWESTERN UTAH
DRAFTED BY I.OSPINA & M.BULLETT

SCALE
1 0 1 2 3 4 MILES
POLYCONIC PROJECTION

1	2
3	4
5	6

PORTION OF COUNTY COVERED

N

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GEOLOGIC BOUNDARY
FAULT
INFERRED FAULT

- Dsi — Simonson Dolomite
- Ds, Dwc — Sevy or Water Canyon Dolomite

SILURIAN

- S — Laketown Dolomite
- OS — Ordovician & Silurian undivided

ORDOVICIAN

- Oa — Ordovician rocks undivided
- Ofh — Fish Haven Dolomite
- Oe — Eureka Quartzite
- Osp — Swan Peak Quartzite
- Ogc — Garden City Limestone

CAMBRIAN

- €un — Cambrian rocks undivided
- €uu — Upper Cambrian rocks undivided
- €mu — Middle Cambrian rocks undivided
- €p — Pioche Shale
- €t, €pm — Tintic or Prospect Mountain Quartzite

PRECAMBRIAN

- Pcbc — Big Cottonwood Group

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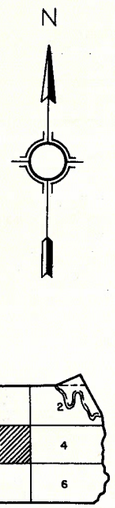

PORTION OF COUNTY COVERED

R 19 W R 18 W R 17 W R 16 W R 15 W R 14 W R 13 W R 12 W

T 3 S T 4 S T 5 S T 6 S

WENDOVER

BOMBING AND GUNNERY RANGE

STANDARD PARALLEL SOUTH

WEST

Qm Qlc Qag Tf 23147 23148 23149 23150 Qltg Pal Cun Qdg IPPo IPPc Qlcs

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- Qa, Qas — Alluvium
- Qds, Qdo, Qdg — Sand dunes
- Qlc, Qlcs — Lake bed sediments
- Qgm — Glacial deposits & surfaces
- Qm — Marshland

TERTIARY

- TQu — Tertiary & Quaternary alluvium
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- Tf — Tertiary lava flows
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- IPPu — Permian rocks undivided
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PERMIAN & PENNSYLVANIAN

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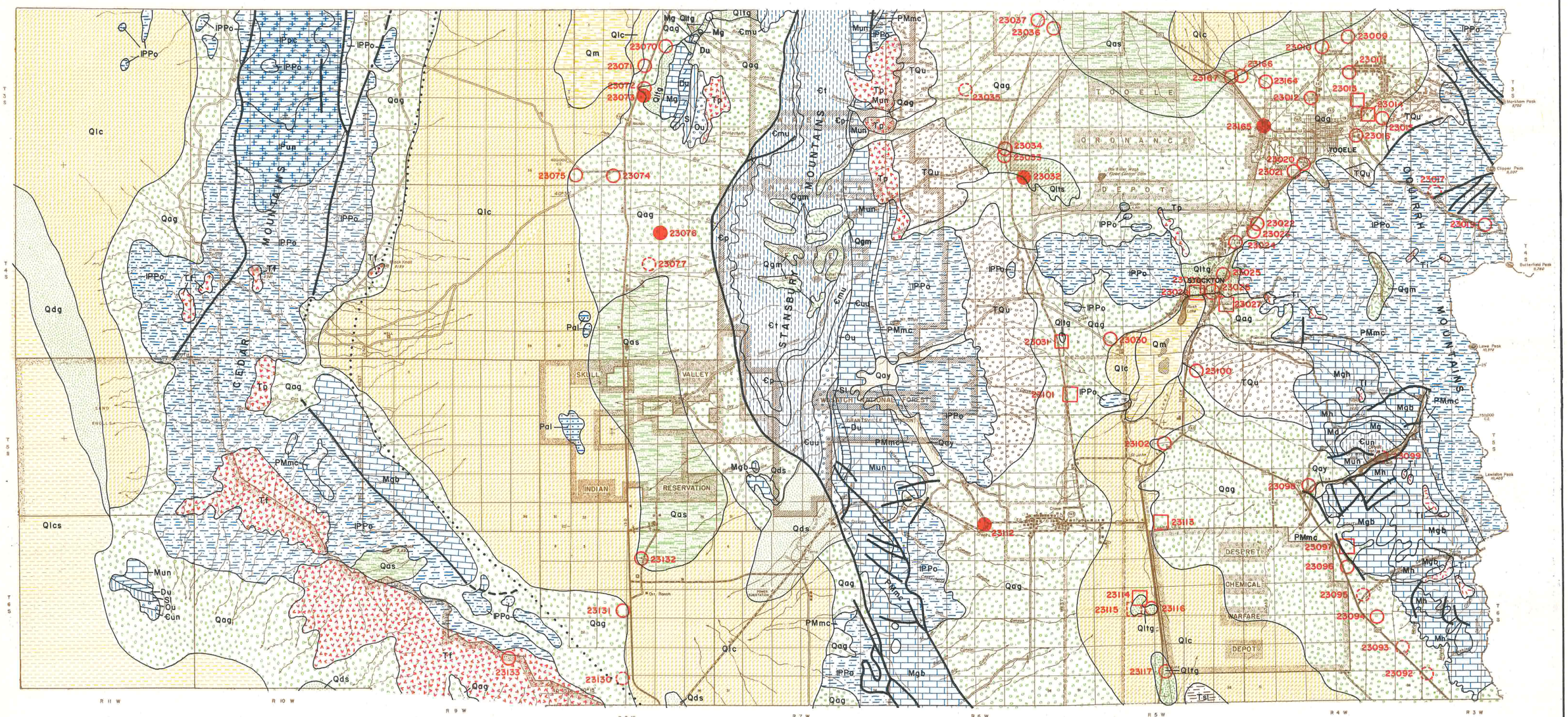

N

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- Ct, Cpm — Tintic or Prospect Mountain Quartzite

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- FAULT
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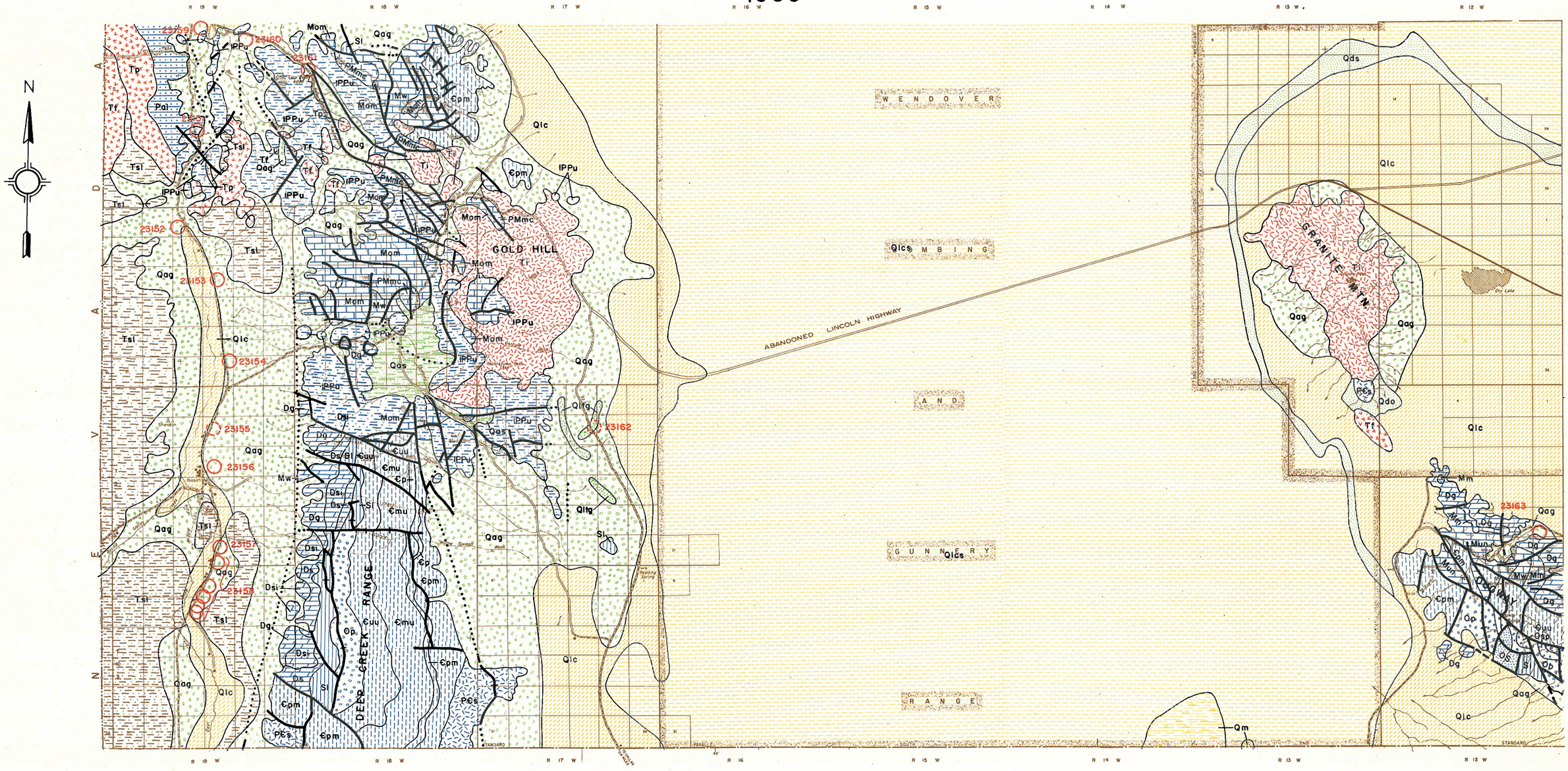

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- Mh — Humbug Formation
- Mm, Mg — Madison or Guardison Limestone

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- Ds, Dwc — Sevy or Water Canyon Dolomite

SILURIAN

- Sl — Laketown Dolomite

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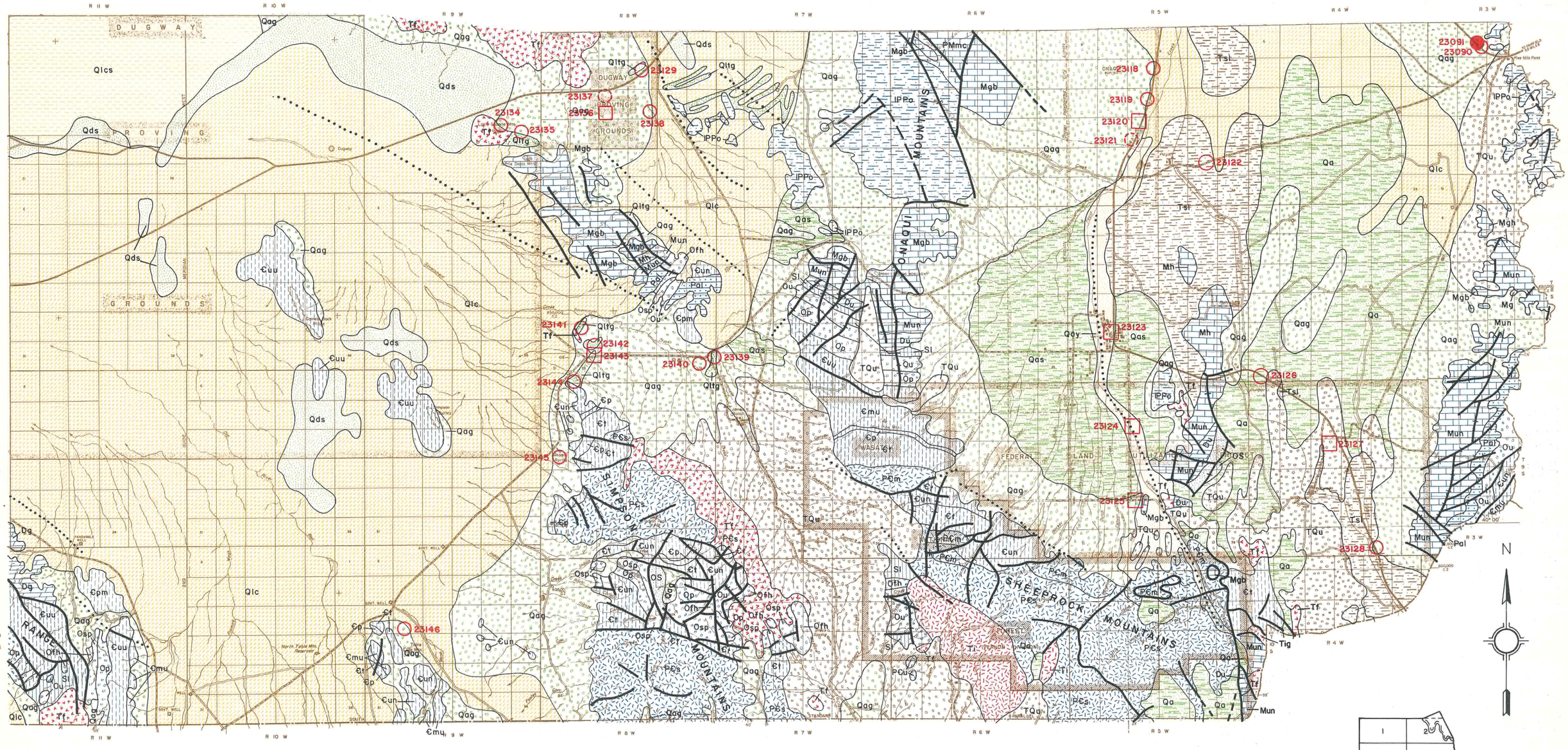

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PORTION OF COUNTY COVERED

ORDOVICIAN & SILURIAN

- OS — Ordovician & Silurian rocks undivided
- Ou — Ordovician rocks undivided
- Ofh — Fish Haven Dolomite
- Osp — Swan Peak Quartzite
- Op — Pogonip Formation

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PITS AND POTENTIAL SITES - TEST DATA SHEET

LOCATION						OWNERSHIP		MATERIAL					TEST DATA - REPRESENTATIVE SAMPLE																				
PIT OR SITE NUMBER	TOWNSHIP	RANGE	40 ACRE TRACT	QUARTER SECTION	SECTION	P = PRIVATE C = COMMERCIAL CO = COUNTY F = FEDERAL S = STATE	OWNER	USE OF MATERIAL	TYPE OF DEPOSIT	PRESENT ESTIMATED QUANTITY (CU. YDS.)	THICKNESS OF MATERIAL	DEPTH OF OVERBURDEN	DATE SAMPLED	TYPE OF SAMPLE	DEPTH OF SAMPLE	SIEVE ANALYSIS									LIQUID LIMIT	PLASTICITY INDEX	SWELL	A.A.S.H.O. CLASSIFICATION	IMMERSION COMPRESSION AVG. P.S.I.		ABRASION 500 REV.	SODIUM SULPHATE LOSS	
																BEFORE CRUSHING		PERCENT PASSING AFTER CRUSHING TO 1" MAX. SIZE											LIME				
																> 3"	> 1"	1"	1/2"	NO. 4	NO.* 8	NO.* 50	NO. 200					WO/	W/		+4	-4
23001	1S	3W	NW	SE	19	P	Kennecott	Borrow B.G.,S.G.	Lake Terrace	400,000	50	0	1964	Cut Bank	Var.	0	7	100	86	72	64	38	15.5	20.5	N.P.	.001	A-1-b	195	219	16.5	3.50	6.32
23002	1S	3W	SW	SW	19	P	Susquehanna Western	Borrow B.G.,S.G.	Lake Terrace	800,000	60	0	1965	Cut Bank	Var.	4	19	100	85	56	42	16	8.0	20.6	N.P.	.014	A-1-a			17.3	1.38	4.82
23003	1S	4W	NE	NE	25	P F**	U.P.R.R. Public Domain	Borrow B.G.,S.G.	Lake Terrace	500,000	50	0	1965	Cut Bank	Var.	1.0	20	100	64	36	29	15	6.1	21.5	N.P.	.022	A-1-b	191	318	15.2	0.31	2.57
23004	1S	4W	SW	SW	25	P	Deseret Livestock	B.G.,S.G.	Spit	15,000	10	1	1965	Cut Bank	4-8	0	15	100	52	17	15	9	4.6	24.6	N.P.	.007				19.7	2.50	-
23005	1S	4W	NW	NW	36	P	Deseret Livestock	B.G.,S.G.	Fan	85,000	20	0	1965	Cut Bank	4-7	7	38	100	54	29	24	13	8.2	25.0	N.P.	.003				29.4	0.93	9.40
23006	2S	4W	NE	SE	1	P	Deseret Livestock	B.G.,S.G.	Talus	150,000	10	0	1964	Talus Slope	3-4	0	3	100	57	3	2	2	1.4	16.0	N.P.	-				28.0	-	-
23007	2S	4W	NW	NE	15	P	Kennecott	Borrow B.G.,S.G.	Beach	450,000	30	0	1965	Cut Bank	3-14	0	8	100	59	32	27	14	6.6	18.8	N.P.	.002	A-2-4	96	352	15.3	2.48	3.74
23008	2S	4W	NE	NE	22	P	Roland Coon	B.G.,S.G.	Spit	600,000	20+	2	1966	Dozer Cut	4-14	20	43	100	57	29	23	7	4.8	20.0	N.P.	.002		110	289	20.0	3.32	13.24
23009	3S	4W	SE	SE	3	P	J.D.Morris	B.G.,S.G.	Lake Terrace	1,600,000	10	2	1964	Cut Bank	2-3	2	30	100	58	39	25	12	0.6	20.0	N.P.	0				22.6	0.10	-
23010	3S	4W	NE	NE	9	P	M.C. & R.B. Sagers	B.G.,S.G.	Lake Terrace	600,000	5	2	1964	Cut Bank	2-3	2	44	100	40	19	16	0.6	0.1	-	VNP	.008				20.9	0.43	3.42
23011	3S	4W	NE	NE	15	P	Droubay & Shields	Borrow B.G.,S.G.	Lake Terrace	600,000	5	2	1966	Road Cut	3-4	0	3	100	92	68	25	10	7.3	29.2	5.4	.010				30.7	6.18	-
23012	3S	4W	NW	NE	21	P	International Smelting	B.G.,S.G.	Lake Terrace	250,000	5	1	1964	Cut Bank	2-4	0	38	100	71	50	39	7	3.9	20.8	N.P.	.014				21.2	0.93	5.09
23013	3S	4W	NE	NW	23	P	International Smelting	Borrow	Lake Terrace	1,600,000	10	1	1964	Cut Bank	4-10	0	0	100		87	78	57	7.0	25 0	N.P.	0	A-3					
23014	3S	4W	NW	SE	23	P	Anderton	Borrow	Lake Terrace	3,000,000	10	1	1964	Cut Bank	1-4	0	0	100		93	86	65	11.2	17.7	N.P.	0	A-2-4					
23015	3S	4W	NW	SW	24	P	International Smelting	B.G.,S.G.	Lake Terrace	2,500,000	15	1	1966	Cut Bank	3-8	0	12	100	72	39	27	10	5.8	17.4	N.P.	-				-	-	3.45
23016	3S	4W	SW	NW	26	P	Pete Buzianis	B.G.,S.G.	Fan	150,000	10	0	1964	Cut Bank	3-6	0	15	100	72	37	26	11	4.5	18.6	N.P.	.009				21.9	0.19	0.90
23017	3S	4W		NE	6	S	Utah State	B.G.,S.G.	Talus	15,000	5	0	1963	Talus Slope	3-4	20	99	100	55	19	14	9	6.5	25.2	N.P.	.008				25.2	0.95	6.71
23018	1N	9W		S/2	36	S	Utah State	Borrow B.G. S.G.	Beach	330,000	8	2	1964	Drill Hole	3-11	0	14	100	78	56	53	17	7.1	13.9	N.P.	.006	A-1-a	207	378	49.7	0.30	2.63
23019	4S	3W	SE	NW	9	P	K.C.C.	B.G.,S.G.	Mine Dump	100,000	20	0	1964	Dump Slope	3-4	0	46	100	50	14	8	3	1.7	21.1	N.P.	-				21.7		
23020	3S	4W	SE	NW	33	C	Ajax Concrete	B.G.,S.G.	Fan	15,000	5	2	1964	Cut Bank	2-3	0	0	100	99	81	55	17	9.1	22.9	N.P.	.005					1.83	4.10
23021	3S	4W	NW	SW	33	P	L. Atkins	B.G.,S.G.	Lake Terrace	25,000	5	2	1964	Cut Bank	3-5	0	2	100	78	45	30	18	6.3	-	VNP.					18.7		
23022	4S	4W	SW	NE	7	C	England Construction	B.G.,S.G.	Lake Terrace	1,200,000	75	1	1964	Cut Bank	2-6	14	33	100	68	31	21	9	1.9	21.4	N.P.	.015				22.4	0.16	0.86
23023	4S	4W	NW	SE	7	P	Atkin	B.G.,S.G.	Lake Terrace	50,000	10	0	1964	Cut Bank	0-5	0	11	100	77	45	34	16	2.2	-	VNP					21.4		
23024	4S	5W	NE	NE	13	P	Combined Metals Reduction	B.G.,S.G.	Fan	75,000	20	2	1963	Cut Bank	5-8	0	0	100	98	84	71	40	1.9	24.7	N.P.	.009				19.5	0.32	4.63
23025	4S	5W	NW	NE	24	P	New Stockton Mining Co.	B.G.,S.G.	Bar	10,000,000	125	0	1963	Cut Bank	3-6	4	26	100	54	19	12	6	2.2	18.6	N.P.	.010				21.8	1.27	8.30

*Borrow samples - Use No. 10 & No. 40 sieves Respectively
** Withdrawal - State Road Commission

PITS AND POTENTIAL SITES - TEST DATA SHEET

LOCATION						OWNERSHIP		MATERIAL					TEST DATA - REPRESENTATIVE SAMPLE																				
PIT OR SITE NUMBER	TOWNSHIP	RANGE	40 ACRE TRACT	QUARTER SECTION	SECTION	P = PRIVATE C = COMMERCIAL CO = COUNTY F = FEDERAL S = STATE	OWNER	USE OF MATERIAL	TYPE OF DEPOSIT	PRESENT ESTIMATED QUANTITY (CU. YDS.)	THICKNESS OF MATERIAL	DEPTH OF OVERBURDEN	DATE SAMPLED	TYPE OF SAMPLE	DEPTH OF SAMPLE	SIEVE ANALYSIS BEFORE CRUSHING > 3"	SIEVE ANALYSIS BEFORE CRUSHING > 1"	SIEVE ANALYSIS PERCENT PASSING AFTER CRUSHING TO 1" MAX. SIZE 1"	1/2"	NO. 4	NO. 8 *	NO. 50 *	NO. 200	LIQUID LIMIT	PLASTICITY INDEX	SWELL	A.A.S.H.O. CLASSIFICATION	IMMERSION COMPRESSION AVG. P.S.I. LIME WO/	IMMERSION COMPRESSION AVG. P.S.I. LIME W/	ABRASION 500 REV.	SODIUM SULPHATE LOSS +4	SODIUM SULPHATE LOSS -4
23026	4S	5W	SW	SW	24	C	A. G. Brande	B.G.,S.G.	Bar	1,000,000	40	2	1963	Cut bank	2-5	5	19	100	82	40	15	6	2.7	24.3	NP	.010				21.0	1.48	3.01
23027	4S	5W	SW	NE	25	P	V. Johnson	Borrow	Fan Terrace	168,000	15	1	1965	Cut bank	3-5	0	11	100	68	34	18	4	2.5	25.6	6.5	.002	A-2-4			26.4	0.80	7.68
23028	4S	5W	NE	SE	23	P	Calumet Metals	Borrow	Bar	1,000,000	40	0	1964	Cut bank	0-6	0	6	100	81	29	22	18	12.6	27.9	9.5	.046	A-2-4			19.0	0.24	5.49
23029	4S	5W	NW	SE	23	P	M.A. Russell	Borrow	Bar	1,000,000+	50	0	1964	Cut bank	6-8	0	11	100	71	38	38	38	31.4	35.4	16.0	.031	A-2-4			19.9	0.61	3.30
23030	4S	5W	NW	SE	32	P	M.A. Russell	B.G.,S.G.	Lake Terrace	2,000,000	12	1	1965	Cut bank	6-10	0	30	100	87	35	28	18	4.5	22.1	NP	.002				21.4	0.82	3.12
23031	4S	6W	E½	NE	36	P	M.A. Russell	Borrow	Spit	1,000,000	60	1	1965	Cut bank	4-8	0	2	98		95	94*	93*	52.0	22.0	8.0	.30	A-4(3)					
23032	3S	6W	NW	SE	35	S	Utah State Road Commission	Borrow B.G.,S.G.	Spit	8,000,000	80	1	1963	Cut bank	3-5	2	14	100	81	53	34	5	3.0	22.8	NP	.002	A-1-a	115	310	21.0	1.2	6.5
23033	3S	6W	SW	SW	26	F	Public Domain	B.G.,S.G.	Fan	600,000	20	1	1964	Cut bank	2-4	0	14	100	71	46	37	15	5.1	17.7	NP	.007				20.9	0.33	4.30
23034	3S	6W	NW	SW	26	F	Public Domain	B.G.,S.G.	Fan	1,000,000+	25	1	1965	Cut bank	10-12	16	40	100	55	36	27	7	4.3	20.3	NP	.018				24.4	0.13	5.63
23035	3S	6W	NE	SE	16	P	J.Reuben ClarkeIII	B.G.,S.G.	Fan	1,000,000+	10	1	1964	Ditch bank	3-6	26	42	100	63	38	30	7	2.4	18.0	NP	.017				21.3	0.39	6.66
23036	3S	6W	NE	SE	1	P	E. Butler	B.G.,S.G.	Lake Terrace	250,000	10	2	1965	Cut bank	3-6	6	5	100	59	34	28	10	4.5	19.7	NP	.000				23.7	0.25	3.07
23037	3S	6W	SE	NW	1	S	Utah State	B.G.,S.G.	Fan	250,000	15	2	1963	Cut bank	2-6	0	25	100	68	40	32	15	6.1	29.5	NP	.016				22.2		
23038	2S	6W	SW	SW	36	P	J.L. Wrathall	B.G.,S.G.	Fan	300,000	10	3	1965	Cut bank	3-6	15	35	100	61	46	39	23	10.1	18.4	NP	.003				36.9	0.74	5.43
23039	2S	6W	NW	NW	32	S	Utah State	B.G.,S.G.	Fan	4,000,000	30	1	1965	Road cut	4-7	7	32	100	60	34	28	17	9.3	22.4	NP	.009				28.8	0.66	7.90
23040	2S	6W	SW	SW	16	P	T. Williams	B.G.,S.G.	Lake Terrace	5,500	10	0	1963	Cut bank	3-6	0	17	100	75	47	35	16	4.1	19.4	NP	.008		333	409	22.5	1.40	7.30
23041	2S	6W	SW	NE	16	S	Utah State	B.G.,S.G.	Fan	650,000	10	1	1965	Cut bank	1-4	16	47	100	57	41	37	24	11.8	19.0	NP	.014				25.0	0.19	1.09
23042	1N	6W		NW	36	P	Morton Salt Co.	Borrow	Dune	490,000	10	0	1964	Drill	0-10	0	0	100		100	98*	81*	39.6	16.0	NP	.000	A-4(1)					
23043	1S	5W			31	P	Alice Baker & Leah Naylor	Borrow	Dune	1,200,000	3	0	1965	Drill	0-4	0	0	100		100	89*	58*	22.1	22.0	NP	0.10	A-2-4					
23044	2S	5W		S/2	4	P	Castagno, Price Morton Salt Co.	Borrow	Dune	585,000	4	0	1965	Drill	0-3	0	0	100		100	84*	51*	21.0	22.0	NP	.000	A-2-4					
23045	2S	4W		S/2	5	P	Kennecott	Borrow	Spit	3,250,000	9	1	1965	Drill	1-3	0	0	100		100	98*	70*	27.0	27.0	NP	0.70	A-2-4					
23046	1S	6W	SW	SW	32	S	Utah State	B.G.,S.G.	Fan	25,000	15	1	1965	Cut bank	4-8	25	63	100	60	32	24	7	1.7	22.0	NP	.017				17.7	2.50	6.70
23047	1S	6W	NW	SW	32	S	Utah State	Borrow	Fan Bar	150,000	10	1	1963	Cut bank	1-5	3	17	100	85	69	64	52	33.3	25.0	10.5	.013	A-2-6			17.7	31.4	14.0
23048	1S	6W	NW	SE	31	P	Staley Anderson	B.G.,S.G.	Fan	15,000	10	1	1963	Cut bank	1-5	13	38	100	72	44	35	21	12.4	23.6	3.7	.011				21.7	1.58	6.19
23049	1S	7W	NW	SE	36	P	Howell Livestock	Borrow	Lake Terrace	148,000	10	1	1965	Cut bank	1-10	0	13	87		65	57*	42*	29.2	20.0	6	0.30	A-2-4					
23050	1S	7W	NE	NE	36	P	Howell Livestock	Borrow	Fan	165,000	15	2	1966	Cut bank	2-6	0	0	100		93	90*	88 *	61.0	25.0	5	0.70	A-4(5)					

* Borrow Sample - Use No. 10 and 40 Sieves Respectively

PITS AND POTENTIAL SITES - TEST DATA SHEET

LOCATION						OWNERSHIP		MATERIAL					TEST DATA - REPRESENTATIVE SAMPLE																				
																SIEVE ANALYSIS																	
																BEFORE CRUSHING		PERCENT PASSING AFTER CRUSHING TO 1" MAX. SIZE										IMMERSION COMPRESSION AVG. P.S.I.			SODIUM SULPHATE LOSS	
PIT OR SITE NUMBER	TOWNSHIP	RANGE	40 ACRE TRACT	QUARTER SECTION	SECTION	P = PRIVATE C = COMMERCIAL CO = COUNTY F = FEDERAL S = STATE	OWNER	USE OF MATERIAL	TYPE OF DEPOSIT	PRESENT ESTIMATED QUANTITY (CU. YDS.)	THICKNESS OF MATERIAL	DEPTH OF OVERBURDEN	DATE SAMPLED	TYPE OF SAMPLE	DEPTH OF SAMPLE	> 3"	> 1"	1"	1/2"	NO. 4	NO.* 8	NO.* 50	NO. 200	LIQUID LIMIT	PLASTICITY INDEX	SWELL	A.A.S.H.O. CLASSIFICATION	LIME WO/	LIME W/	ABRASION 500 REV.	+4	-4
23051	1S	7W		SW	25	F**	Public Domain	Borrow B.G., S.G.	Lake Terrace	1,450,000	17	0	1965	Drill	8-14	10	42	100	57	34	34	17	2.5	19.3	NP	.001	A-2-4	169	273	22.2	1.14	9.77
23052	1S	6W	NE	NW	3	P	Solar Salt	Borrow	Spit	120,000	6	0	1965	Cut bank	0-10	0	0	100		100	*95	*52	15.0	19.0	NP	0	A-2-4					
23053	1N	6W	SE	NW	34	P	Solar Salt	Borrow	Spit	200,000	6	1	1965	Cut bank	1-4	0	2	98		72	*43	* 7	4.0	26.0	NP	0	A-1-a					
23054	1N	6W	SW	SE	28	F	Public Domain	Borrow B.G., S.G.	Beach	4,200,000	20	2	1965	Drill	0-14	2	28	100	58	39	32	20	10.5	20.0	5.7	.010	A-1-a	146	231	20.3	6.10	1.64
23055	2N	6W	NE	NE	32	P	E. A. Castagno	B.G., S.G.	Fan Terrace	400,000	10	0	1964	Cut bank	3-6	4	33	100	78	44	31	15	11.1	21.5	NP	.007				26.5	1.57	6.97
23056	2N	6W		SE	16	P	E. A. Castagno	Borrow	Dune	320,000	10	0	1964	Cut bank	0-10	0	0	100		100	*100	*71	3.6	17.0	NP		A-3					
23057	1S	7W	NW	NE	27	F	Public Domain	Borrow	Fan	120,000	20	0	1965	Drain cut	0-2	0	8	92		62	*57	*49	33.0	22.0	3.0	.400	A-2-4					
23058	1S	7W	SW	NE	22	F	Public Domain	Borrow	Fan	85,000	11	0	1965	Drain cut	3-6	0	20	80		49	*42	*29	14.0	23.0	6.0	0.10	A-1-a					
23059	1S	7W	SE	NE	16	P	Deseret Livestock	Borrow	Spit	75,000	12	2	1964	Cut bank	2-4	0	1	100	96	91	87	12	3.1	18.0	NP	.005	A-1-b					9.26
23060	1S	7W	SW	SE	9	P	Deseret Livestock	Borrow	Fan	100,000	20	0	1966	Drill Hole	0-5	0	0	100		43	36	29	21	24.0	2	0.20	A-1-b					
23061	1S	7W	NW	NW	16	P	Deseret Livestock	Borrow	Fan	250,000	10	0	1966	Back hoe	0-6	3	5	95	91	66	54	38	26.0	26.0	7.0	0.3	A-2-4					
23062	1S	7W	NW	SW	16	P	Deseret Livestock	B.G., S.G.	Lake Terrace	7,600	27	2	1964	Cut bank	2-4	0	18	100	49	15	10	3	1.2	16.9	NP	.002		310	377	19.4	0.7	5.6
23063	1S	7W	NW	NW	30	F	Public Domain	B.G., S.G.	Spit	250,000	12	2	1966	Dozer Cut	4-12	7	35	100	48	27	22	9	4.1	17.4	NP	.010		102	191	22.0	0.79	5.99
23064	1S	7W	SE	SE	29	P	Deseret Livestock	B.G., S.G.	Fan	40,000	20	1	1965	Cut bank	5-8	0	18	100	54	30	27	10	3.2	17.0	NP	.003				19.7	0.21	4.91
23065	1S	7W	NW	NW	32	P	Deseret Livestock	B.G., S.G.	Fan	1,000,000	18	2	1965	Cut bank	2-8	0	52	100	53	29	22	12	2.1	19.8	NP	.005				20.2	0.30	2.78
23066	2S	7W	NW	NE	7	F**	Public Domain	B.G., S.G.	Fan Terrace	500,000	20	2	1964	Cut bank	3-6	21	61	100	50	29	25	18	4.4	21.5	NP	.015				21.0	0.64	3.52
23067	2S	8W	NE	SW	25	F	Public Domain	B.G., S.G.	Fan	20,000	12	1	1964	Cut bank	1-7	13	27	100	67	36	26	15	2.8	16.6	NP	.022				22.4	0.18	3.42
23068	2S	8W	SW	SW	23	F	Public Domain	B.G., S.G.	Spit	30,000	10	2	1964	Cut bank	2-8	6	24	100	68	36	29	22	11.3	20.0	NP	.009				21.3	1.14	9.77
23069	2S	8W	NE	NW	36	P	Deseret Livestock	B.G., S.G.	Spit	300,000	20	1	1964	Dozer cut	1-3	3	42	100	39	24	21	16	1.9	20.6	NP					22.1		
23070	3S	8W	NW	NW	10	F	Public Domain	B.G., S.G.	Lake Terrace	900,000	15	2	1964	Cut bank	5-6	0	5	100	77	30	19	10	4.9	26.9	NP	.007				20.6	0.83	5.40
23071	3S	8W	SE	SW	10	F	Public Domain	B.G., S.G.	Fan	150,000	10	1	1964	Cut bank	1-6	2	18	100	53	23	20	16	8.2	21.2	NP	.010				26.5	2.33	6.24
23072	3S	8W	NE	SW	15	F	Public Domain	B.G., S.G.	Terrace	500,000	15	1	1964	Cut bank	2-4	1	16	100	58	27	25	22	7.3	25.8	NP	.031				25.0	0.72	2.65
23073	3S	8W	SE	SW	15	F**	Public Domain	B.G., S.G.	Lake Terrace	500,000	15	1	1964	Cut bank	6-8	0	30	100	53	30	23	6	1.2		VNP	.018				24.0	0.39	10.90
23074	3S	8W	NE	SW	33	P	Deseret Livestock	B.G., S.G.	Fan	75,000	5	2	1964	Cut bank	2-6	0	7	100	82	30	20	7	3.9	21.5	NP					22.8		
23075	3S	8W	NW	SW	32	S	Utah State	B.G., S.G.	Fan	125,000	4	0	1964	Cut bank	1-4	0	9	100	76	45	39	15	3.4	18.7	NP	.022				22.3	0.68	8.21

* Borrow Samples Use No. 10 and No. 40 Sieves Respectively
** Withdrawn - State Road Commission

PITS AND POTENTIAL SITES - TEST DATA SHEET

LOCATION						OWNERSHIP		MATERIAL					TEST DATA - REPRESENTATIVE SAMPLE																				
PIT OR SITE NUMBER	TOWNSHIP	RANGE	40 ACRE TRACT	QUARTER SECTION	SECTION	P = PRIVATE C = COMMERCIAL CO = COUNTY F = FEDERAL S = STATE	OWNER	USE OF MATERIAL	TYPE OF DEPOSIT	PRESENT ESTIMATED QUANTITY (CU. YDS.)	THICKNESS OF MATERIAL	DEPTH OF OVERBURDEN	DATE SAMPLED	TYPE OF SAMPLE	DEPTH OF SAMPLE	SIEVE ANALYSIS								LIQUID LIMIT	PLASTICITY INDEX	SWELL	A. A. S. H. O. CLASSIFICATION	IMMERSION COMPRESSION AVG. P. S. I.		ABRASION 500 REV.	SODIUM SULPHATE LOSS	
																BEFORE CRUSHING		PERCENT PASSING AFTER CRUSHING TO 1" MAX. SIZE										LIME				
																> 3"	> 1"	1"	1/2"	NO. 4	NO.* 8	NO.* 50	NO. 200					WO/	W/		+4	-4
23076	4S	8W	NE	SE	10	F**	Public Domain	B.G., S.G.	Fan	5,000,000	50	1	1965	Dozer cut	1-3	4	32	100	59	38	34	15	4.1	16.7	NP	.008				20.5	0.15	5.48
23077	4S	8W	NE	SW	15	F	Public Domain	B.G., S.G.	Fan	200,000	10	1	1965	Dozer cut	1-4	8	46	100	57	39	34	22	8.5	19.6	NP	.019				21.9	1.75	2.21
23078	1N	9W	NW	SW	21	F**	Public Domain	B.G., S.G.	Fan	1,500,000	10	1	1964	Drain cut	1-4	5	34	100	64	45	39	31	9.1	21.9	NP	.002				27.8	1.53	3.24
23079	1N	9W	SW	NW	18	F**	Public Domain	B.G., S.G.	Lake Terrace	600,000	40	1	1964	Cut bank	1-5	17	48	100	61	34	29	23	3.3	18.4	NP	.002		215	382	17.9	2.9	3.9
23080	1N	10W	NE	SE	23	F**	Public Domain	B.G., S.G.	Fan	500,000	12	1	1964	Dozer cut	1-5	0	25	100	71	51	42	30	11.0	21.3	NP	.004				20.4	1.77	4.98
23081	1N	10W		E2	26	F	Public Domain	Borrow B.G., S.G.	Fan	1,300,000	10	0	1964	Drill	0-6	5	24	100	66	44	37	27	13.4	17.5	NP	.020				20.4	2.02	8.75
23082	1N	10W		SW	33	F**	Public Domain	B.G., S.G.	Spit	350,000	20	2	1963	Drill	2-16	0	10	100	70	29	17	6	1.8	19.9	NP	.003		97	176	24.0	3.40	10.3
23083	1S	10W	SW	NW	5	F	Public Domain	B.G., S.G.	Lake Terrace	65,000	10	1	1965	Cut bank	3-5	0	11	100	75	52	43	18	4.1	21.0	NP	.003				18.0	0.82	6.20
23084	1S	10W	NW	NE	7	F**	Public Domain	Borrow	Spit	10,000	20	1	1965	Back hoe	2-4	4	21	100	76	63	56	42	27.8	28.4	3.3	.010	A-2-4				0.86	10.25
23085	1S	11W	NW	SE	1	F**	Public Domain	B.G., S.G.	Lake Terrace	300,000	7	1	1965	Cut bank	1-4	0	12	100	78	51	40	15	6.4	16.1	NP	.001				16.2	0.93	3.89
23086	1S	11W		NW	18	F**	Public Domain	B.G., S.G.	Lake Terrace	1,000,000	10	1	1964	Cut bank	8-12	3	36	100	64	38	33	27	10.6	20.7	NP	.003		226	295	17.2	6.3	4.8
23087	1N	8W	NE	NE	31	F**	Public Domain	B.G., S.G.	Bar	170,000	8	2	1964	Dozer cut	2-5	10	40	100	52	21	16	11	6.0	20.9	NP	.001		42	249	18.3	1.46	6.13
23088	1N	9W	NW	SE	23	F	Public Domain	B.G., S.G.	Bar	55,000	7	2	1965	Dozer cut	5-10	1	28	100	62	33	25	7	2.6	21.2	NP	.004		258	307	17.1	1.14	10.4
23089	1N	8W	SW	NE	30	F	Public Domain	B.G., S.G.	Lake Terrace	50,000	12	3	1964	Dozer cut	3-12	6	48	100	49	27	20	11	3.0	20.4	NP	.013		326	344	15.3	0.62	4.84
23090	7S	3W	NW	SE	5	P	L.S. Johnson	B.G., S.G.	Lake Terrace	150,000	12	1	1965	Cut bank	12-15	0	0	100	95	59	42	11	8.0	23.5	NP	.018				27.8	8.62	7.46
23091	7S	3W	SW	NE	5	F**	Public Domain	B.G., S.G.	Fan	25,000	8	2	1965	Cut bank	8-12	0	14	100	61	26	20	14	8.1	25.4	NP	.028				26.7	6.39	15.6
23092	6S	3W	NW	NW	31	F	Public Domain	B.G., S.G.	Fan	500,000	8	1				NO SAMPLE TAKEN																
23093	6S	4W		NW	25	F	Public Domain	B.G., S.G.	Fan	2,500,000	10	1				NO SAMPLE TAKEN																
23094	6S	4W	NE	NW	23	F	Public Domain	B.G., S.G.	Lake Terrace	120,000	15	2	1965	Cut bank	4-6	8	33	100	63	34	26	15	9.5	25.6	NP	.015				23.8	1.27	5.52
23095	6S	4W	SE	NE	15	F	Public Domain	B.G., S.G.	Lake Terrace	40,000	6	1	1965	Dozer cut	3-6	1	19	100	67	37	28	15	8.8	28.4	NP	.009				23.6	1.5	6.7
23096	6S	4W	SE	NW	10	F	Public Domain	B.G., S.G.	Fan	150,000	15	2	1965	Cut bank	8-10	0	0	100	76	33	25	13	10.2	22.3	3.5	.010				29.0	0.14	7.69
23097	6S	4W	NE	SW	3	F	Public Domain	Borrow	Fan	30,000	5	0	1965	Cut bank	3-6	0	14	100	71	39	34	28	23.2	25.0	8.6	.032	A-1-b			26.9	4.9	8.9
23098	5S	4W	NW	SW	28	P	R. Jorgenson	B.G., S.G.	Fan	5,000,000	40	1	1965	Cut bank	1-5	12	44	100	66	34	25	13	16.8	22.2	NP	.050				25.6	1.50	5.0
23099	5S	4W	NE	SW	23	P	McFarland	B.G., S.G.	Mine Dump	150,000	120	0	1965	Dump slope	3-7	21	61	100	44	20	14	7	4.6	18.4	NP	.002				27.1	1.4	
23100	5S	5W	NE	SW	2	S	Utah State	B.G., S.G.	Spit	30,000	20	1	1964	Cut bank	1-10	5	45	100	64	34	26	16	5.4	20.3	NP	.015				20.4	0.46	1.01

** Withdrawn - State Road Commission

PITS AND POTENTIAL SITES - TEST DATA SHEET

LOCATION						OWNERSHIP		MATERIAL					TEST DATA - REPRESENTATIVE SAMPLE																			
																SIEVE ANALYSIS															
																BEFORE CRUSHING		PERCENT PASSING AFTER CRUSHING TO 1" MAX. SIZE												
PIT OR SITE NUMBER	TOWNSHIP	RANGE	40 ACRE TRACT	QUARTER SECTION	SECTION	P = PRIVATE C = COMMERCIAL CO = COUNTY F = FEDERAL S = STATE	OWNER	USE OF MATERIAL	TYPE OF DEPOSIT	PRESENT ESTIMATED QUANTITY (CU. YDS.)	THICKNESS OF MATERIAL	DEPTH OF OVERBURDEN	DATE SAMPLED	TYPE OF SAMPLE	DEPTH OF SAMPLE	> 3"	> 1"	1"	1/2"	NO. 4	NO. * 8	NO. * 50	NO. 200	LIQUID LIMIT	PLASTICITY INDEX	SWELL	A. A. S. H. O. CLASSIFICATION	IMMERSION COMPRESSION AVG. P. S. I. LIME WO/	IMMERSION COMPRESSION AVG. P. S. I. LIME W/	ABRASION 500 REV.	SODIUM SULPHATE LOSS +4	SODIUM SULPHATE LOSS -4
23101	5S	5W	SW	NW	7	F	Public Domain	Borrow	Beach	10,000	2	1	1964	Cut bank	1-3	0	37	100	66	40	34	29	19.7	18.4	NP	.015	A-1-b			29.1	1.25	3.00
23102	5S	5W	SE	SW	15	F	Public Domain	B.G., S.G.	Fan	350,000	6	1	1965	Cut bank	3-5	0	25	100	53	23	17	12	6.7	30.7	6.0	.012				24.1	5.4	
23103	1N	12W	SE	SE	14	F	Public Domain	B.G., S.G.	Bar	500,000	9	1	1965	Cut bank	3-6	2	28	100	53	31	22	9	3.4	22.0	NP	.140				21.0	2.73	8.53
23104	1S	13 W	Sections 23	26	35	F**	Public Domain	Borrow B.G., S.G.	Lake Terrace	2,500,000	20	0	1963	Drill	0-12	10	43	100	64	38	32	21	9.7	21.9	NP	.004	A-1-a	54	281	15.8	1.0	6.7
23105	2S	12W			13	F**	Public Domain	B.G., S.G.	Lake Terrace	360,000	15	1	1963	Drill	1-10	5	20	100	76	58	50	28	7.8	17.6	NP	.001		101	310	15.2	3.3	5.4
23106	1S	19W		N/2	17	F**	Public Domain U.S.A.F.	Borrow B.G., S.G.	Fan	3,000,000	20	0	1963	Drill	0-20	0	4	100	85	52	37	16	9.2	17.9	NP	.008	A-1-a	150	233	21.5	1.46	7.0
23107	1S	19W		S/2	4	F	Public Domain U.S.A.F.	Borrow B.G., S.G.	Fan	7,400,000	13	0	1963	Drill	0-15	0	5	100	89	60	41	13	6.9	17.1	NP	.001	A-1-a	161	314	18.2	6.3	8.1
23108	1N	19W	NW	SE	27	F**	Public Domain	B.G., S.G.	Bar	120,000	40	2	1963	Cut bank	2-10	5	25	100	79	43	29	18	1.5	18.8	NP	.002		181	278	19.5	3.2	4.4
23109	1N	18W		SW	21	F**	Public Domain	Borrow B.G., S.G.	Fan	2,000,000	12	0	1963	Drill	0-15	0	1	100	78	51	40	19	11.5	17.6	NP	.011	A-1-a	188	290	24.0	2.1	4.9
23110	2N	16W		W/2	23	F**	Public Domain	Borrow B.G., S.G.	Lake Terrace	2,300,000	10	0	1964	Drill	0-7	0	17	100	79	51	39	26	15.7	20.0	2.2	.002	A-1-a	102	257	17.6	1.40	6.0
23111	2N	18W				F	Public Domain	B.G., S.G.	Bar	2,000,000	10	0	1962	Cut bank	0-3	0	3	100	78	27	10		4.3	22.6	3.8	.015				24.0		
23112	5S	6W	SE	SW	34	F**	Public Domain	B.G., S.G.	Fan	2,000,000	20	2	1965	Cut bank	2-8	12	38	100	57	32	22	7	4.1	18.8	NP	.017				21.9	2.5	6.7
23113	5S	5W	NW	SW	34	F	Public Domain	Borrow	Beach	50,000	4	1	1965	Cut bank	2-4	0	9	100	66	37	34	31	21.8	36.3	9.1	.033	A-2-4			25.1	1.9	7.6
23114	6S	5W	SW	NE	16	S	Utah State	Borrow	Beach	75,000	5	1	1965	Cut bank	3-5	0	24	100	83	50	37	20	13.4	25.7	5.9	.013	A-2-4			32.9	16.3	17.4
23115	6S	5W	NE	SW	16	P	E.A. Stookey	Borrow	Spit	15,000	5	0	1965	Dozer cut	2-5	0	0	100	88	62	52	24	15.6	37.3	NP	.061	A-1-b				13.0	20.6
23116	6S	5W	NE	SE	16	P	E.A. Stookey	B.G., S.G.	Beach	20,000	5	1	1965	Cut bank	2-4	0	0	100	81	39	32	19	11.4	28.5	NP	.034				26.2	2.5	9.4
23117	6S	5W	SE	SW	27	P	G.A. Johnson	B.G., S.G.	Beach	75,000	5	1	1965	Dozer cut	2-4	0	5	100	56	28	23	10	4.7	31.3	NP	.019				22.2	1.2	6.9
23118	7S	5W	E/2	NE	9	P	D.V. Anderson	B.G., S.G.	Beach	15,000	5	1	1965	Cut bank	3-5	0	1	100	84	43	27	4	3.3	23.7	NP	.009				24.8	2.2	5.4
23119	7S	5W	W/2	NE	16	P	M. G. Stimson	B.G., S.G.	Beach	1,000,000	15	2	1965	Cut bank	3-8	0	12	100	63	27	24	20	14.4	24.4	NP	.202				22.7	2.14	2.42
23120	7S	5W	NE	NW	21	Co	Tooele Co.	Borrow	Beach	15,000	5	1	1965	Dozer cut	3-8	0	9	100	70	42	31	21	14.1	25.6	0.7	.016	A-2-4			25.2	1.20	4.03
23121	7S	5W	NW	SW	21	Co	Tooele Co.	B.G., S.G.	Beach	75,000	5	1	1965	Dozer cut	1-3	0	25	100	54	32	24	15	6.8	27.0	NP	.011				27.6	2.16	17.12
23122	7S	5W	NW	SE	26	F	Public Domain	B.G., S.G.	Spit	20,000	6	1	1965	Cut bank	3-6	0	13	100	92	65	45	14	8.1	27.7	NP	.006				20.0	5.60	13.53
23123	8S	5W	SE	NW	29	Co	Tooele Co.	Borrow	Fan	30,000	9	1	1965	Cut bank	3-7	7	36	100	60	34	24	11	7.5	41.6	20.1	.162	A-2-7			21.4	0.69	5.71
23124	9S	5W	SW	NW	9	F	Public Domain	Borrow	Fan	1,500,000	10	1	1965	Cut bank	9-13	16	46	100	52	33	25	9	5.7	33.1	13.8	.098	A-2-6			21.5	0.84	7.28
23125	9S	5W	SW	SW	21	F	Public Domain	Borrow	Fan	2,000,000	15	3	1965	Cut bank	3-5	4	37	100	53	31	23	8	4.2	32.6	13.0	.014	A-2-6			20.6	0.58	3.78

* Borrow samples use No. 10 and No. 40 Sieves Respectively
** Withdrawal - State Road Commission

PITS AND POTENTIAL SITES - TEST DATA SHEET

LOCATION						OWNERSHIP		MATERIAL					TEST DATA - REPRESENTATIVE SAMPLE																			
																SIEVE ANALYSIS															
																BEFORE CRUSHING		PERCENT PASSING AFTER CRUSHING TO 1" MAX. SIZE										IMMERSION COMPRESSION AVG. P.S.I.				SODIUM SULPHATE LOSS	
PIT OR SITE NUMBER	TOWNSHIP	RANGE	40 ACRE TRACT	QUARTER SECTION	SECTION	P = PRIVATE C = COMMERCIAL CO = COUNTY F = FEDERAL S = STATE	OWNER	USE OF MATERIAL	TYPE OF DEPOSIT	PRESENT ESTIMATED QUANTITY (CU. YDS.)	THICKNESS OF MATERIAL	DEPTH OF OVERBURDEN	DATE SAMPLED	TYPE OF SAMPLE	DEPTH OF SAMPLE	> 3"	> 1"	1"	1/2"	NO. 4	NO. 8	NO. 50	NO. 200	LIQUID LIMIT	PLASTICITY INDEX	SWELL	A. A. S. H. O. CLASSIFICATION	LIME WO/	LIME W/	ABRASION 500 REV.	+4	-4
23126	8S	4W	SE	SW	31	P	R.R. Fitzgerald	B.G.,S.G.	Fan	45,000	3	2	1965	Cut bank	2-3	18	43	100	60	41	33	22	11.5	30.5	NP	.045				22.7	1.4	5.8
23127	9S	4W	NW	NE	16	P	H.C. Cummings	Borrow	Fan	75,000	10	1	1965	Cut bank	4-7	3	24	100	72	49	36	14	5.2	31.0	6.7	.025	A-2-4			23.8	2.77	8.23
23128	9S	4W	NW	SW	35	F	Public Domain	Borrow B.G.,S.G.	River Terrace	250,000	4	1	1965	Cut bank	5-7	0	15	100	69	44	35	26	17.4	22.4	NP	.020				28.2	1.09	5.31
23129	7S	8W	SE	NW	10	F	Dugway Proving Grounds	B.G.,S.G.	Spit	1,000,000	20	1	1963	Cut bank	1-8	0	19	100	57	21	12	4	1.2	21.0	NP	.009				18.3	1.34	7.89
23130	6S	8W	NE	NE	33	F	Public Domain	B.G.,S.G.	Lake Terrace	300,000	5	1	1965	Dozer cut	1-4	0	17	100	67	31	25	10	3.4	19.8	NP	.014				20.6	2.62	6.26
23131	6S	8W	NE	SE	16	S	Utah State	B.G.,S.G.	Beach	50,000	12	1	1965	Cut bank	5-8	0	9	100	80	53	41	21	5.2	19.3	NP	.022				24.8	6.83	11.87
23132	6S	8W	SE	SW	3	F	Public Domain	B.G.,S.G.	Beach	25,000	8	2	1965	Cut bank	2-4	0	24	100	87	48	34	17	2.2	18.8	NP	.014				20.6	1.73	8.02
23133	6S	9W	SE	SE	26	F	Dugway Proving Grounds	B.G.,S.G.	Spit								NO SAMPLE TAKEN															
23134	7S	9W	NW	SE	23	F	Dugway Proving Grounds	B.G.,S.G.	Spit	250,000	15	1	1963	Cut bank	1-5	23	73	100	77	22	15	6	2.4	26.2	NP	.018				20.1	10.84	22.11
23135	7S	9W	SE	SW	24	F	Dugway Proving Grounds	B.G.,S.G.	Spit	500,000	30	1	1963	Cut bank	1-10	0	21	100	85	43	24	4	0.9	24.3	NP	.009				19.7	1.61	8.69
23136	7S	8W	NW	SW	16	F	Dugway Proving Grounds	Borrow	Fan								NO SAMPLE TAKEN															
23137	7S	8W	NW	NW	16	F	Dugway Proving Grounds	B.G.,S.G.	Spit	40,000	5	1	1963	Dozer Cut	1-3	23	59	100	63	34	28	19	3.0	16.4	NP	.011				17.0	3.09	4.98
23138	7S	8W	NW	SE	15	F	Dugway Proving Grounds	B.G.,S.G.	Beach	80,000	5	2	1963	Cut bank	2-5	4	23	100	73	43	36	22	4.2	14.6	NP	.004				21.9		
23139	8S	8W	NE	NE	36	F	Public Domain	B.G.,S.G.	Spit	500,000	15	1	1965	Cut bank	0-25	0	20	100	49	29	18	8	3.1	19.1	NP	.005				28.5	1.55	7.22
23140	8S	8W	NE	NW	36	F	Public Domain	B.G.,S.G.	Lake Terrace	150,000	15	1	1965	Cut bank	2-6	0	16	100	72	42	22	4	1.8	17.7	NP	.006				22.8	2.30	6.98
23141	8S	8W	NE	NW	29	F	Public Domain	B.G.,S.G.	Spit	350,000	15	0-2	1965	Cut bank	2-6	4	14	100	67	36	18	5	2.0	18.1	NP	.005				22.4	0.49	7.80
23142	8S	8W	NE	SE	29	F	Public Domain	B.G.,S.G.	Spit	250,000	10	0-2	1965	Cut bank	3-6	0	4	100	42	7	7	5	2.8	28.0	3.8					23.8	0.87	
23143	8S	8W	NE	NE	32	S	Utah State	Borrow	Spit	27,000	5	5	1965	Cut bank	6-8	0	20	100	50	19	14	3	1.6	37.0	18.6	.011	A-2-6			29.2	0.24	4.88
23144	8S	8W	SW	SW	32	S	Utah State	B.G.,S.G.	Beach	30,000	15	2	1965	Cut bank	2-8	2	31	100	42	29	26	16	2.0	19.6	NP	.007				20.1	0.19	3.03
23145	9S	8W	SE	NE	18	P	E.A. & G.H. Anderson	B.G.,S.G.	Lake Terrace	40,000	15	2	1965	Cut bank	2-5	0	1	100	91	52	37	6	1.9	22.0	NP	.009				23.1	2.1	8.7
23146	10S	9W	NE	SW	17	F	Public Domain	B.G.,S.G.	Fan	40,000	6	3	1965	Cut bank	2-4	0	4	100	88	64	50	14	0.7		NP	.006				32.7	2.1	7.3
23147	6S	19W		NW	17	F	Public Domain	B.G.,S.G.	Lake Terrace	14,000	8	1/2	1965	Cut bank	1/2-3	0	14	100	48	23	22	16	9.3	18.6	NP	.017				21.4	0.66	3.14
23148	6S	19W		SE	17	F	Public Domain	B.G.,S.G.	Lake Terrace	17,000	10	1/2	1965	Cut bank	1/2-4	0	14	100	75	41	30	11	5.1	21.1	NP	.008				17.9	0.27	4.22
23149	6S	19W			21	S	Utah State	B.G.,S.G.	Beach	140,000	10	1					NO SAMPLE TAKEN															
23150	6S	19W			28	F	Public Domain	B.G.,S.G.	Lake Terrace	40,000	8	1	1965	Cut bank	1-3	0	2	100	72	17	15	12	7.7	29.3	NP	.008				20.7	1.28	4.71

PITS AND POTENTIAL SITES - TEST DATA SHEET

LOCATION						OWNERSHIP		MATERIAL					TEST DATA - REPRESENTATIVE SAMPLE																					
PIT OR SITE NUMBER	TOWNSHIP	RANGE	40 ACRE TRACT	QUARTER SECTION	SECTION	P = PRIVATE C = COMMERCIAL CO = COUNTY F = FEDERAL S = STATE	OWNER	USE OF MATERIAL	TYPE OF DEPOSIT	PRESENT ESTIMATED QUANTITY (CU. YDS.)	THICKNESS OF MATERIAL	DEPTH OF OVERBURDEN	DATE SAMPLED	TYPE OF SAMPLE	DEPTH OF SAMPLE	SIEVE ANALYSIS									LIQUID LIMIT	PLASTICITY INDEX	SWELL	A.A.S.H.O. CLASSIFICATION	IMMERSION COMPRESSION AVG. P.S.I.		ABRASION 500 REV.	SODIUM SULPHATE LOSS	
																BEFORE CRUSHING		PERCENT PASSING AFTER CRUSHING TO 1" MAX. SIZE											LIME				
																> 3"	> 1"	1"	1/2"	NO. 4	NO. 8 *	NO. 50 *	NO. 200					WO/	W/		+4	-4
23151	7S	19W	-	-	21	F	Public Domain	B.G.,S.G	Spit	30,000	15'	1-2'	1965	Cut Bank	2-5'	0	44	100	65	52	37	12	5.5	17.7	N.P.	.009				26.5	2.67	7.66
23152	8S	19W	NW	SW	4	F	Public Domain	B.G.,S.G.	Lake Terrace	33,000	12'	1/2'	1965	Cut Bank	2-5'	0	2	100	89	61	43	12	5.9	24.1	N.P.	.006				30.5	-	18.30
23153	8S	19W	SE	NW	15	F	Public Domain	B.G.,S.G.	Lake Terrace	1,400,000	20'	0	1965	Cut Bank	2-4'	0	7	100	75	41	30	10	3.1	15.1	N.P.	.002				28.2	0.96	5.81
23154	8S	19W	NE	NE	34	F	Public Domain	B.G.,S.G.	Lake Terrace	35,000	12'	1	1965	Cut Bank	1-3'	0	17	100	83	47	30	11	6.7	20.5	N.P.	.012				25.8	0.42	6.91
23155	9S	19W	SE	NW	10	F	Public Domain	B.G.,S.G.	Lake Terrace	48,000	3'	0				NO SAMPLE TAKEN																	
23156	9S	19W	NE	SW	15	F	Public Domain	B.G.,S.G.	Lake Terrace	200,000	20'	2-5'	1965	Cut Bank	6-9'	0	5	100	87	59	42	7	4.0	23.3	N.P.	.020				38.5	-	6.51
23157	9S	19W	SW	NE	34	F	Public Domain	B.G.,S.G.	Lake Terrace	34,000	8'	2'	1965	Cut Bank	2-4'	0	23	100	57	29	21	11	5.0	17.6	N.P.	.003				24.3	0.72	3.63
23158	10S	19W	-	-	3 9	F	Public Domain	B.G.,S.G.	Lake Terrace	320,000	10'	0-3'				NO SAMPLE TAKEN																	
23159	7S	19W	-	-	3	F	Public Domain	B.G.,S.G.	Beach	10,000	4'	1/2'				NO SAMPLE TAKEN																	
23160	7S	19W	-	-	2	S	Utah State	B.G.,S G.	Lake Terrace	30,000	6'	1'	1965	Cut Bank	1-3'	0	3	100	78	42	27	6	2.9	25.6	N.P.	.001				22.6	0.57	6.19
23161	7S	18W	-	-	7	F	Public Domain	B.G.,S.G.	Lake Terrace	60,000	10'	0	1965	Cut Bank	4-6'	2	13	100	79	57	38	9	1.7	18.4	N.P.	.003				26.7	0.80	5.95
23162	9S	17W	SE	NE	10	F	Public Domain	B.G.,S.G.	Spit	200,000	20'	0	1965	Cut Bank	15-18	0	7	100	79	49	25	8	6.6	18.4	0.3	.001				21.0	2.89	9.29
23163	9S	12W	SE	SW	25	F	Public Domain	B.G.,S.G.	Fan	300,000	15'	1'				NO SAMPLE TAKEN																	
23164	3S	4W	SW	NW	17	P	A.W. Droubay	B.G.,S.G.	Lake Terrace	30,000	10'	2'	1966	Cut Bank	2-8'	0	30	100	62	27	27	26	2.5	21.5	N.P.	-				20.1	0.25	0.63
23165	3S	4W	NW	NW	29	S	Utah State Road Commission	B.G.,S.G.	Spit	150,000	10'	2'	1966	Cut Bank	2-8'	19	33	100	59	29	23	4	1.8	19.3	N.P.	-				23.1	0.83	6.64
23166	3S	4W	NW		18	P	Clegg Livestock	B.G.,S.G.	Spit	35,000	8'	1'	1966	Cut Bank	1-7'	5	14	100	77	49	41	26	19.4	27.9	N.P.	-				31.9	4.51	4.93
23167	3S	5W	SE	NE	13	F	Public Domain	B.G.,S.G.	Lake Floor	65,000	12'	2'	1966	Cut Bank	5-16'	13	43	100	63	34	27	13	4.5	21.2	2.2	-				25.0	4.92	11.65
23168	1S	7W	N 1/2	NE	16	P	Deseret Livestock	Borrow	Fan	320,000	15'	0'	1966	Drill Hole	0-12'	0	0	100		92	* 82	* 45	24.0	20	N.P.	0	A-1-b						

*Borrow samples use No. 10 and No. 40 Sieves Respectively

PITS AND POTENTIAL SITES-TEST DATA SHEET

LOCATION						OWNERSHIP		MATERIAL					TEST DATA-REPRESENTATIVE SAMPLE																			
																SIEVE ANALYSIS												IMMERSION COMPRESSION AVG. P.S.I.			SODIUM SULPHATE LOSS	
																BEFORE CRUSHING		PERCENT PASSING AFTER CRUSHING TO 1" MAX. SIZE										LIME				
PIT OR SITE NUMBER	TOWNSHIP	RANGE	40 ACRE TRACT	QUARTER SECTION	SECTION	P = PRIVATE C = COMMERCIAL CO = COUNTY F = FEDERAL S = STATE	OWNER	USE OF MATERIAL	TYPE OF DEPOSIT	PRESENT ESTIMATED QUANTITY (CU. YDS.)	THICKNESS OF MATERIAL	DEPTH OF OVERBURDEN	DATE SAMPLED	TYPE OF SAMPLE	DEPTH OF SAMPLE	> 3"	> 1"	1"	1/2"	NO. 4	NO.* 8	NO.* 50	NO. 200	LIQUID LIMIT	PLASTICITY INDEX	SWELL	A. A. S. H. O. CLASSIFICATION	WO/	W/	ABRASION 500 REV.	+4	-4